FREEPORT-McMoRAN

Freeport-McMoRan Chino Mines Company
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April 6, 2023

Certified Mail #70182290000117919052

Mr. John Rhoderick, Director
Water Protection Division
New Mexico Environment Department
P.O. Box 5469
Santa Fe, New Mexico 87502

Dear Mr. Rhoderick:

Re: Draft Feasibility Study (FS) for the Smelter Tailing Soils Investigation Unit – Chino AOC

Freeport-McMoRan Chino Mines Company (Chino) submits under separate cover the *Draft Feasibility Study (FS) for the Smelter Tailing Soil Investigation Unit (STSIU)* under the Chino Administrative Order on Consent (AOC). This *Draft FS* is submitted per Appendix A, Section 2.7.7. of the AOC to the New Mexico Environment Department (NMED). Per the AOC Definitions Section, Item 10:

> *"Feasibility Study (FS) shall mean a comprehensive, written review, screening, and evaluation of alternatives developed during the Remedial Investigation to define the objectives of the response action, and to develop appropriate and necessary Remedial Action plans to be implemented at each Investigation Unit."*

Prior to the development of this *Draft FS* and per Appendix A, Section 2.7, Chino provided a letter detailing the *Commencement of the FS and FS Schedule* on November 19, 2010, and submitted the *Final FS Proposal for the STSIU* on October 17, 2011 to NMED. Per the approved FS Proposal in support of developing the draft FS, Chino completed the following activities:

- Chino completed survey and soil sampling requirements in 2011.
- Chino performed a phytotoxicity and vegetation study in 2014, as discussed below, following data evaluation of the 2011 sampling results.
- Chino completed the STSIU Amendment Plot Study in 2013, and provided a 5 Year Monitoring Report as discussed below.
- Chino completed a 5-year study with annual sampling to evaluate the effect of the 2008 "white rain" event within the STSIU. The resulting report is discussed below.
- The process for Use Attainability Analysis (UAA) Hydrology Protocol for drainages in the STSIU was completed with the acceptance by the NM Water Quality Control Commission (WQCC) in 2015.
- Chino performed site-specific copper toxicity studies for the STSIU and successfully petitioned the WQCC to amend the Surface Water Quality Standards (20.6.4 NMAC) in 2015.
- Chino implemented a supplemental field study to identify suitable reference areas for vegetation community sites in terms of soil toxicity to plants from copper for the FS analysis in October 2018 (resulting report is discussed below).

- Additional interim remedial actions (IRA) within the STSIU were completed following the approval of the FS workplan. These include the Hurley Railroad IRA completed in 2012, the Razorback Ridge IRA completed in 2014, and the B-Ranch IRA completed in 2019.

Four of the *Draft STSIU FS* appendices bring forward previous studies to support remedy option discussions and the FS decision-making making process.

- The *Year 5 Monitoring Report for the STSIU Amendment Study Plots*, dated December 2017, is attached as Appendix A. NMED provided a response letter dated January 8, 2019, for this report in agreement with Chino to include in the FS in order to review in context of this attached submittal.
- The revised *Year 5 Report on pH Monitoring to Evaluate the Effect of the White Rain on the STSIU is attached as Appendix B*. The previous draft was submitted to NMED in April 2017. The revised report with attached response document addresses NMED comments received September 18, 2017. Chino deferred submitting the revised report with NMED approval dated March 19, 2018, until it could be provided with the draft FS.
- A *Phytotoxicity and Vegetation Community Study Workplan* was submitted March 6, 2014, and conditionally approved by NMED in a letter dated March 10, 2014. Following the field investigation performed by Chino with NMED support and lab analysis of samples as per the workplan, a draft *Phytotoxicity and Vegetation Community Study* report was provided for informal review to NMED in 2018. The finalized report under Appendix C is formally submitted to NMED as part of and in support of this draft FS, which incorporates edits and technical group discussions generated from the NMED informal review. A response document is provided with the study to facilitate NMED's review.
- In October 2018, a supplemental field study was performed by Chino with NMED support to identify suitable reference areas for vegetation community sites in terms of soil toxicity to plants from copper. The results of this field study titled *2018 Reference Area Evaluation Technical Memorandum* are provided as Attachment A in Appendix D under *Methods and Results for Upland and Drainage Bank Analysis.*

The *Draft FS* was submitted today in electronic form to Mr. David Mercer. Please contact Ms. Pam Pinson at (575) 912-5213 with any questions or comments concerning this draft feasibility study for the STSIU.

Sincerely,

Tyler R. Johnson
FOR,
Sherry Burt-Kested
Manager, Environmental Services

SBK:pp
20230406-001

cc: (via email)
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DRAFT

Freeport-McMoRan Chino Mines Company

Smelter/Tailing Soils Investigation Unit Feasibility Study

Smelter Tailing Soils Investigation Unit
Chino Mine Investigation Area, Grant County, New Mexico

March 2023

Smelter/Tailing Soils Investigation Unit Feasibility Study

Smelter Tailing Soils Investigation Unit
Chino Mine Investigation Area, Grant County, New Mexico

March 2023

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Acronyms and Abbreviations

ABA	Acid base accounting
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirements
BAF	Bioaccumulation Factor
bgs	Below Ground Surface
BLM	Biotic Ligand Model
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGCS	Comprehensive Groundwater Characterization Study
Chino	Freeport-McMoRan Chino Mines Company
COC	Constituent of Concern
COPC	Constituent of Potential Concern
csm	Conceptual Site Model
CY	Cubic Yards
DEL	De minimis effects level
DOT	Department of Transportation
DP	Discharge Permit
ERA	Ecological Risk Assessment
FS	Feasibility Study
FSP	Field Sampling Plan
FRMS	Freeport-McMoRan Reclamation Services
HHRA	Human Health Risk Assessment
HSIU	Hurley Soils Investigation Unit
HWCIU	Hanover/Whitewater Creeks Investigation Unit
IA	Investigation Area
IRA	Interim Remedial Action
IU	Investigation Unit
LDR	Land Disposal Regulation
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NCP	National Contingency Plan

NDVI	Normalized Difference Vegetation Index
NMAC	New Mexico Administrative Code
NMED	New Mexico Environmental Department
NMWQA	New Mexico Water Quality Act
OAT	Observed Apparent Trend
OMM	Operation, Maintenance and Monitoring
OPCZ	Open Pit Capture Zone
pCu	Cupric ion activity (pCu2+)
PEL	Probable Effects Level
pH	Hydrogen ion (standard units)
RAC	Remedial Action Criteria
RAOs	Remedial Action Objectives
RCRA	Resource Conservation Recovery Act
RI	Remedial Investigation
ROW	Right of Way
SGFB	Small ground feeding bird
SPLP	Synthetic Precipitation Leaching Procedure
SSL	Soil Screening Level
STSIU	Smelter/Tailing Soils Investigation Unit
TBC	To Be Considered
TOC	Total organic carbon
UAA	Use Attainability Analysis
UCL	Upper Confidence Limit
USPEA	United States Environmental Protection Agency
WER	Water Effect Ratio
WQCC	Water Quality Control Commission
WQS	Water Quality Standard

1. Introduction

The Feasibility Study (FS) was prepared for Freeport-McMoRan Chino Mines Company (Chino) to develop and evaluate potential remedial alternatives for the Smelter Tailing Soils Investigation Unit (STSIU) at the Chino Mine Investigation Area, Grant County, New Mexico (site). This FS has been developed in accordance with the requirements in the Administrative Order on Consent (AOC) following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance. The AOC, effective December 24, 1994, distinguishes between historical mineral processing activities and current operations at Chino.

1.1 Background

The STSIU is one of the Investigation Units identified within the Investigation Area (IA) of the AOC. The IA includes all areas in which environmental media may have been affected by historical operations at mining and processing facilities. The STSIU is located approximately 12 miles southeast of Silver City, and includes historical smelting facilities, mineral processing facilities, tailing impoundments, and surrounding areas (Figure 1-1). The STSIU is located to the east of the town of Hurley, New Mexico which contained the Hurley Smelter, and has previously been defined as all areas containing and proximal to Chino's former copper smelter and ancillary facilities, including the tailings disposal facility (SRK, 2008a).

In accordance with the AOC Scope of Work, a Remedial Investigation (RI) for the STSIU was conducted to generate the data necessary to evaluate the potential effects to human health and the environment from historically affected media in the STSIU. Data has been collected in the STSIU starting in 1995 and continuing to present day to determine potential impacts to soil, sediment, and surface water from historical mineral processing activities. The human health risk assessment (HHRA) and ecological risk assessment (ERA) have shown that areas of the STSIU have elevated metals concentrations and depressed pH in soil and surface water, as described in Section 3.1.1 and 4.1.1. The FS Proposal for the STSIU presented activities necessary to evaluate remedial alternatives that comply with New Mexico Environment Department (NMED) Pre-FS remedial action criteria (RAC) (Arcadis 2011a).

NMED issued Pre-FS RAC for the STSIU (NMED, 2010, 2011) including:

Soil

- 27 mg/kg arsenic (0-1")
- 100,000 mg/kg iron in soil (0-1")
- 5,000 mg/kg copper (0-1")
- 1,600 mg/kg copper (0-6")
- Cupric ion activity (pCu^{2+}) (hereafter referred to as "pCu") $\geq$ 5 where copper > 327 mg/kg. Note: Chino interprets this to actually mean NMED selected the STSIU Pre-FS RAC cupric ion activity (pCu2+) < 5 where copper is > 327 mg/kg.

Surface Water

- Water quality criteria contained in New Mexico Administrative Code (NMAC) §20.6.4.

These Pre-FS RAC values were developed based on the evaluations conducted in the RI, HHRA, and ERA. The FS and Record of Decision (ROD) will be completed consistent with the National Contingency Plan (NCP). Pre-

FS RAC are consistent with the use of preliminary remediation goals (PRG) by EPA in the NCP; therefore, new information can be used to refine the Pre-FS RAC and selection of alternatives (§300.430(e)(2)(i) NCP). Final remediation goals will be determined in the ROD. Further details about the Pre-FS RAC are presented in Section 2.4.

1.2 Objectives

The primary objectives of this FS, as initially presented in the FS Proposal (Arcadis 2011a), are to identify potential remedial areas and remedial technologies to address contaminated soil, sediment, and surface water in the STSIU. To achieve this, remedial action objectives (RAOs) were developed to define the basis for remediation, including numerical Pre-FS RAC as discussed in the previous section. Remedial technologies described in this document were assessed using the CERCLA FS criteria (Section 4.3, USEPA, 1988) to determine their potential to meet the project RAOs.

As part of the FS Proposal, a comprehensive literature review was completed, and potential remedial technologies were identified for application at the STSIU (Arcadis 2011a). Remedial technology alternatives evaluated in this report are unchanged from the FS Proposal and analysed individually and in comparison with each other using the following criteria: overall protection of human and ecological receptors, compliance with applicable or relevant and appropriate requirements (ARARs); long-term effectiveness and permanence; reduction in toxicity, implementability; and cost. The FS process followed to conduct the evaluation of alternatives presented in the FS includes the following steps:

- Summarize RAOs and Pre-FS RAC that address the key risk drivers and potential routes of exposure;
- Identify areas where potential remedial action(s) may be necessary to address RAOs and Pre-FS RAC;
- Identify and screen potential remedial technologies;
- Develop remedial alternatives; and
- Evaluate the remedial alternatives considering the FS criteria.

The above steps will be used to guide the selection of the preferred remedial alternatives.

1.3 Summary of Related Current Activities

Between the start of the AOC process in April 1995 and July 2022, there have been a number of site characterization or remediation activities in or near the STSIU at Chino. These include the following:

- AOC Interim Removal Action Work Plan and Completion Report for Interim Remedial Action, Hurley Soils Investigation Unit, (Golder, 2006, 2008)
- Phase 1 Remedial Investigation Proposal, Hanover and Whitewater Creeks Investigation Unit (Golder, 1999a)
- Comprehensive Groundwater Characterization Study (CGCS) (Golder 1999b)
- Phase II Revised Remedial Investigation Report, Hurley Soils Investigation Unit (Golder, 2000a)
- Phase 1 Revised Remedial Investigation Report, Hanover/Whitewater Creek Investigation Unit (Golder, 2000b)
- Remedial Investigation Proposal, Smelter Tailings Soils Investigation Unit (SRK, 2004)

- Slag Pile Characterization (Golder 2007a)
- Remedial Investigation, Smelter Tailings Soils Investigation Unit (SRK, 2008a,b)
- Smelter Tailings Soils Investigation Unit Ecological Risk Assessment (NewFields, 2008)
- Smelter Tailings Soils Investigation Unit Human Health Risk Assessment (Gradient, 2008)
- Smelter/Tailing Soils Investigation Unit Interim Removal Action Completion Report (“Golf Course IRA” Arcadis 2009)
- STSIU Terrestrial Invertebrate Bioaccumulation and Bioavailability Study (Arcadis, 2010a)
- Groundwater Quality Pre-FS RAC for Drainage Sediments Study (Arcadis, 2011b)
- Chino Mines Tailing Pond 1 & 2 Construction Quality Assurance Report (Golder, 2013a)
- Tailing Pond B/C Construction Quality Assurance Report (Golder, 2013b)
- Supplemental Completion Report, Interim Removal Action, Smelter/Tailing Soils Investigation Unit (“Railroad IRA” Golder, 2013c).
- Development of Site-Specific Copper Criteria Interim Report (Arcadis 2013a,b).
- Construction Quality Assurance Report, Lake One Reclamation (EMC^2, 2014)
- Supplemental Completion Report, Razorback Ridge Area, Interim Remedial Action, Smelter/Tailing Soils Investigation Unit (Golder 2015)
- Year 5 Monitoring Report for STSIU Amendment Study Plots (Arcadis 2017) (Appendix A)
- Year 5 Report on pH Monitoring to Evaluate the Effect of the White Rain on STSIU (Arcadis 2023) (Appendix B)
- B-Ranch Interim Remedial Action Completion Report Smelter/Tailing Soils Investigation Unit (Arcadis 2020)
- Assessment Report for Apache Tejo Wash (Golder 2023)
- Phytotoxicity and Vegetation Community Study (Arcadis 2018, Appendix C)
- Reference Area Technical Memorandum (Arcadis 2022, Attachment A in Appendix D)

A brief overview of the above reports for 2011 and prior years was included in the approved FS Proposal (Arcadis, 2011a). Several of the above reports have been updated or are new since the submittal of the FS Proposal in 2011. These reports are summarized below including reports that followed the FS Proposal.

Interim Removal Action for STSIU - Golf Course and Railroad

The *Interim Removal Action (IRA) for the STSIU* (Arcadis, 2006, 2009) and *Supplemental IRA for the STSIU* (Golder, 2013c) addressed elevated copper in surface soil to the north and west of Hurley, New Mexico. A former golf course existed to the north of the Town of Hurley. The North and South Golf Course designation refers to this area; the division between the north and south is the access road to the Chino facility entrance in Hurley. Areas to the east and west of Highway 180 on the west side of the Golf Course were included (Arcadis 2009) as well as acres alongside the railroad (Golder 2013c)[1].

The objective of the IRA was to remove areas where soil copper concentrations were greater than 5,000 milligrams per kilogram (mg/kg) (lateral delineation). Chino applied the NMED-approved residential RAC for the HSIU as a conservative measure in 2008. STSIU Pre-FS RAC was defined by NMED in 2009. Within the area exceeding 5,000 mg/kg copper, the excavation was completed vertically until the soil did not exceed 2,700 mg/kg copper or bedrock was encountered and, as a result, the spatially weighted 95 percent upper confidence limit (UCL) copper concentration in the 0-6 inch depth interval is estimated to be 1,314 mg/kg. Therefore, while this remedy was implemented prior to NMED issuing final pre-FS RAC, the soil removal meets the bird pre-FS RAC of 1,600 mg/kg.

Freeport-McMoRan Reclamation Services (FMRS) performed the IRA excavation activities in partnership with Arcadis, who conducted the field engineering services, which took place from January 2008 to August 2008. A supplemental IRA excavation of the remaining 32 acres between the town of Hurley and the golf course sites was conducted from August 2012 to December 2012 by TIPE Construction with oversight by Golder. Excavation depths during the IRA activities averaged three inches bgs for the total removal area. Based on confirmation sampling and refinement of the removal areas, approximately 170 acres of the proposed 190 acres in 2008 and approximately 32 acres in 2012 were ultimately remediated for a total of 202 acres. Final excavation volumes were determined by contractor load counts. The total volume removed during these IRAs are estimated at 68,112 cubic yards (Arcadis, 2009) and 22,125 cubic yards (Golder, 2013c).

Following the completion of the IRAs in 2008 and 2012, five years of monitoring was completed for both sites to document the successful revegetation of the IRA footprint (Arcadis 2014, Golder, 2018). The results of the five-year monitoring effort demonstrated the successful development of an early-seral stage mixed grama herbaceous alliance across the Golf Course sites. The canopy cover levels exceed the reference area guidance for canopy cover, and the data indicated that native species colonized the site with minimal cover from non-native species. Further, the vegetation limited erosion and controlled dust.

Interim Removal Action for STSIU – Razorback Ridge and B-Ranch

An IRA was completed east of Lake One in areas adjacent to the Whitewater Creek Diversion Channel and James Canyon in 2013 and 2014 in an area referred to as Razorback Ridge (Golder 2015). The objective of this IRA was to remove soils in areas with copper concentrations higher than 5,000 mg/kg, delineated laterally, as per the STSIU pre-FS RAC. Within the areas with higher than or equal to 5,000 mg/kg, soils were removed vertically to a depth of 1 to 2 feet as this surface soil volume was utilized as borrow fill material for reclamation. The final excavation area for the Razorback Ridge Area (which includes the East Removal Borrow Area) addressed in 2013 and 2014 was 94 acres. An additional 29 acres within the IRA Area were remediated through operational construction excavation and borrow activities prior to 2002. Soils were excavated to a depth of approximately 12 inches down to 40 feet during excavation for borrow material, exceeding the target remediation depths. See next

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[1] The Highway 180 right-of-way (ROW) extends 50 feet on either side of the roadway and is considered by the New Mexico Department of Transportation (NMDOT) to be under its management. Any impacted soils within the Highway ROW will be addressed by NMDOT as part of their planned expansion of Highway 180 from a 2-lane roadway to a 4-lane roadway for the entire corridor between Bayard and Deming (NMDOT 2021). Chino expects to coordinate with NMDOT prior to planned construction and anticipates proposing an option for disposal of copper contaminated soils in compliance with existing regulatory requirements.

bullet section below. In all areas of removal, the Pre-FS RAC for the STSIU of 5,000 mg/kg for copper was achieved (Golder 2015). Approximately 113,000 cubic yards of soil (73 acres) from Razorback Ridge and 34,000 cubic yards of soil (21 acres) from the East Removal Borrow Area were removed between 2013 and 2014 and used for borrow material, specific to the IRA requirements.

An additional IRA was completed in 2019 for the B-Ranch area located adjacent to the reclaimed Slag Pile, the Golf Course IRA sites, as well as the Town of Hurley. Approximately 16,000 cubic yards of soil (22 acres) from B-Ranch site were removed. In all areas of removal, the Pre-FS RAC for the STSIU of 5,000 mg/kg for copper was achieved (Arcadis 2020).

Lake One and Tailing Pond Reclamation – Borrow Fill

As part of the CCP reclamation activities, Chino removed borrow fill, including wind-blown tailings (WBT), from the east and west sides of the historic tailings dams in 2013 (Golder, 2013a, 2013b, and 2013d) and 2014 (EMC[2], 2014). The extent of the borrow removal of more than 520 acres of land included the Razorback Ridge Borrow Area (87 acres), the South James Canyon Borrow Area (90 acres), Borrow Area A (71 acres), Borrow Area B (41 acres), Borrow Area C (50 acres), and Borrow D (153 acres). There was an additional 574 acres of WBT utilized as grading fill material where only the surface one foot depth was borrowed for Tailings Pond 1, 4, and 6. Borrow Areas A, B, and C, as well as Razorback Ridge, were used for fill and cover material for Tailings Pond 1, 2, B, C, 4, 6E and 6W and for Lake One. The top 2 feet of surface areas on the Razorback Ridge Areas and South James Canyon Borrow Area were removed and used as grading fill (i.e., below the base of the cover) within Lake One. Once placed, the WBT fill material also received a minimum 3-foot thickness of cover material along with the rest of the Lake One reclamation area. These borrow areas are addressed under the CCP.

Site Specific Copper Criteria Study

Arcadis conducted a copper water effect ratio (WER) study for the STSIU surface waters in 2011. As described in the WER work plan (Arcadis, 2011c), the purpose of the WER study was to evaluate the site-specific toxicity of copper in STSIU surface waters and to determine whether the hardness-specific copper criteria accurately reflect site-specific copper bioavailability and toxicity. A total of 24 STSIU water samples were collected in the WER study, including 18 toxicity test samples and an additional 6 analytical chemistry samples.

Results from the WER study were described in the *Development of Site-Specific Copper Criteria Interim Report* submitted to NMED in March 2013 (Arcadis, 2013a). The primary objectives of this Criteria Adjustment Interim report were to report all data collected as well as any deviations from the work plan, evaluate all collected data with quality control criteria described in the WER guidance (USEPA 1994, 2001), and determine if the collected data are sufficient to develop copper site-specific criteria (SSC) that can be applied to STSIU surface waters. Broadly, this study demonstrated that hardness-adjusted copper criteria are overly protective for surface waters of STSIU drainages, and the methods listed in Section 20.6.4.10, part D of NMAC can be successfully applied to surface water in STSIU drainages. The Interim WER Report also established that the toxicity and chemistry data collected were acceptable for deriving WERs when these data are compared to USEPA (1994 and 2001) WER acceptability criteria. Preliminary WERs were calculated according to USEPA guidance (USEPA 1994, 2001) and presented in that report. A site-specific copper WER model was subsequently developed to derive adjusted copper criteria in STSIU surface waters in the *Revised Site-Specific Copper Toxicity Model Report* submitted to NMED in October 2013 (Arcadis, 2013b). The site-specific criteria for STSIU surface waters were adopted by NMED and are contained in NMAC §20.6.4.809.

STSIU Amendment Study Plots

Chino implemented the STSIU Amendment Study in 2008 based upon an NMED-approved work plan to explore the possible remedial options to determine if lime and organic matter amendments with or without tilling could be an effective and feasible remedial action to address the elevated copper concentrations and depressed pH in surface soils within the STSIU (Arcadis, 2008a). The study tested the longevity of pH stabilization, copper sequestration ability, vegetative re-colonization, and constructability (Arcadis 2017, see Appendix A).

In June of 2008, Chino applied lime and organic matter to three test plots, and one test plot was used as a control with no amendments or tilling. A control plot with no treatment was also established adjacent to each of these four plots. During the application of lime and organic matter, two of the test plots on relatively level ground were also tilled. Chino conducted monitoring of the copper, pH, and vegetation cover before and after amendment application. The results from the monitoring events were presented in the *Year 5 Monitoring Report for Smelter/Tailings Soils Investigation Unit Amendment Study Plots* (Arcadis 2017). In summary, an unexpected white rain (discussed in next section) increased pH and pCu significantly and reduced copper uptake to plants of all the plots, which was sustained over the 5-year monitoring period. As a result, the treatments added to the soil in the plots provided minimal if any additional benefit in further reducing copper impacts to the plant community because the white rain already significantly improved the soil chemistry. The white rain increased plant species richness but had a small effect on total plant cover. The vegetation community of the steeper plot was degraded by the two amendments, with a loss of rangeland grasses and desirable shrubs. The tilling and mixing of lime amendments into the soil tended to increase pH but degraded the plant community on the fair rangeland plot and improved the plant community on the poor rangeland plot; however, the recovery of degraded conditions could take decades. Liming and tilling are only recommended in relatively flat, poor rangeland rocky areas where phytotoxicity from copper can be demonstrated. Tilling alone has been shown to be effective and should be tried first at an 8-inch depth and deeper to evaluate the proper depth but only on slopes < 13% and where the rangeland condition is poor. Organic matter application was not recommended.

STSIU pH Monitoring

A significant shift in pH upward was observed in the STSIU following a “white rain” precipitation event on January 7, 2008 (Arcadis, 2008b). To quantify the permanence of this trend, Chino submitted, and NMED approved, the Soil pH Monitoring Work Plan in 2010 (Arcadis, 2010b). The Work Plan outlined eighteen locations (increased to 22 in 2011) to monitor soil pH over 5 years[2], with annual reports provided to NMED after each sampling event and a final, Year 5 report summarizing the results of the pH monitoring effort (Arcadis 2023, see Appendix B).

The results of the 5-year study showed that the 2008 white rain greatly benefitted the STSIU soils by increasing the pH and pCu of the acidic soils, making copper less bioavailable due to the increase in copper adsorption by secondary soil minerals, such as iron hydroxide, at higher pH values (Arcadis 2023). The increase in pCu led to a decrease in the uptake of copper into living organisms. The ultimate result appears to be reduced toxicity to wildlife and their food sources and improved wildlife and rangeland habitat. Based on Mining and Minerals Division (MMD) guidelines and mineralogical analysis, the potential of STSIU soils to generate acid is consistently low in most areas. Based on results reported in the *Year 5 Report on pH Monitoring to Evaluate the Effect of the White Rain on the Smelter/Tailings Soils Investigation Unit* (Arcadis 2023), persistence in the future cannot be predicted with certainty, and additional five-year monitoring is recommended as part of the STSIU FS to confirm

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[2] Soil excavations from reclamation borrow activities over the monitoring period removed five of the sample locations, so five additional locations were added in 2012. Overall, 17 locations were monitored all five years.

the prediction that the pH increase should be sustained. Appendix B includes the revised report plus a brief response to NMED comments (see Appendix I of the report for all response to comments).

Phytotoxicity and Vegetation Community Study

The site-wide and STSIU-specific ERAs stated that elevated concentrations of copper and other metals, combined with depressed soil pH, have led to a risk of phytotoxicity for some areas of the Site based on site-specific greenhouse phytotoxicity studies and plant community surveys in 1999 (NewFields 2006, NewFields 2008, Schafer and Associates 1999a,b). For plants, these ERAs linked the toxic action of total copper in the shallow surface layer of the soil to cupric ion activity, quantified as pCu. Site conditions changed since the original studies, however, requiring additional studies; specifically, the two historical smelter stacks were shut down in 2002 and demolished in 2007. Reclamation of Lake One and older tailing dams was also completed. Additionally, a significant upward shift in soil pH was observed at STSIU following the “white rain” precipitation event on January 7, 2008. The change in soil pH due to the white rain event has lowered cupric ion activity of the soil (Arcadis 2023) and, more importantly, possibly changed the complex soil geochemistry (e.g., cation exchange capacity) in a manner that could shift the relationship between pCu and plant and community endpoints. In addition, the 1999 phytotoxicity and community studies did not explicitly account for site-specific seeds, representative background, or potentially confounding physical and chemical factors across various soil types.

New studies were proposed by Chino in 2013 to address these changes, approved by NMED in 2014. Data collection was completed in 2015, results submitted in April 2017 and re-submitted in August 2017 for NMED review. The report in Appendix C was updated in 2018 and addresses the last set of NMED comments provided in January 2018; the response to NMED comments are attached at the end of the report. The results generally support that the ranges of the probable effects level (PEL) and de minimis effects level (DEL) could be lower than the 1999 study. The native site species did not always perform better than non-native species, and their addition produced less of a change in the results relative to 1999 results. Dose-response models for each category of soil (bedrock, steep slope, flat granular, flat rocky) produced a different DEL or PEL. The variable DEL and PEL values, depending on soil conditions, create uncertainty around the application of a pre-FS RAC for vegetation across all soil types, and on whether more harm than good will result if simple cleanup criteria are used across the entire IU. This study’s information was useful for the FS because it defines areas on the site by the four soil categories of bedrock, steep slope > 13%, flat granular, and flat rocky soils that strongly influence plant responses to pCu. The community study was based on site soils that were not homogenized in the laboratory (maintaining pCu stratification) and are the most representative of field conditions.

Draft Technical Memorandum on pCu Reference Area Visit and Analysis

Based on NMED comments regarding the phytotoxicity report and an August 2018 meeting between Chino and NMED, Chino proposed sampling additional locations for “reference” or “background” to increase confidence in conclusions. Reference areas were identified in the field with NMED, and Chino sampled the community metric endpoints of cover, richness, and rangeland condition (via Observed Apparent Trend [OAT] score) as well as soil chemistry (pH, total copper, and sulfate) across all four soil categories identified in the phytotoxicity study (Arcadis 2018): flat granular, flat rocky, bedrock, and steeper slopes (>13%). Eight reference areas were sampled for soil and surveyed for three plant endpoints (OAT score, richness, cover) in October 2018, bringing the total reference area dataset to be used for comparing plant communities on site to reference areas off site to ten, given that two reference sites (wildlife reference north and STS-PT-2013-26) had been sampled previously. Three additional STSIU onsite locations were sampled or surveyed. Two of these were sampled for soil chemistry and/or plant community data to evaluate pCu at highly overgrazed areas on the site, and one (wildlife reference south plot) was sampled and surveyed along with the wildlife reference north location to calibrate changes[3] in plant cover due to the climatic differences over 3 different years of sampling (2011, 2014, 2018); this repeat survey ensured that on-site and off-site area data are comparable.

Like the two previously sampled reference locations, all new reference locations had sulfate concentrations and pH in the soil within the expected range for the geology and soils of the location, indicating that they do not have any smelter or windblown tailing impacts. These results support that the new reference locations adequately represent background conditions without mining impacts. The new reference area data are **not** incorporated in the phytotoxicity study report, however, because it has been through several review cycles with NMED. Instead, data from the new reference locations are evaluated in this FS as to how they affect DELs and PELs for pCu impacts on the vegetation community. DELs and PELs presented in the community section of the phytotoxicity report were recalculated with the new data. The recalculation is important because the phytotoxicity study did not have any reference areas representative of flat rocky, bedrock, or slopes > 13%. Previous community PEL and DEL were based on the flat granular reference area, underestimating the values for the other 3 soil categories. When averaged across all three endpoints, the DELs ranged from 5.83 to 8.08, and PELs ranged from 2.97 to 4.60, with the highest values in the flat rocky soil category. The Tech Memo (Arcadis 2022) is provided as Attachment A to Appendix D.

Assessment Report for Apache Tejo Wash

Chino documented completion of an NMED request for a “ground survey” of the entire Apache Tejo drainage system in 2021. The “ground survey” includes historical information, as well as reconnaissance results and property ownership information. The “ground survey” covers the entire wash from the Chino tailing impoundments to Whitewater Creek, including two tributaries to Apache Tejo Wash. Chino also characterized tailing and other materials along the wash and interpreted the data with respect to the potential for exposure and the potential for re-release to other media, including groundwater. The Assessment Report concluded that the potential for constituents to infiltrate to groundwater is low; the tailing in the channel and the Big Berm generally showed little to no potential to generate acid or leach metals (Golder 2023). The depth to groundwater is 100 feet along the wash, and the vadose zone is comprised of alluvium and Gila Conglomerate with neutralizing potential. Also, there is limited potential to re-release constituents to surface water because recent, cleaner sediment has covered much of the historical tailing along the wash with a couple limited exceptions. The data were screened against STSIU Pre-FS RAC for birds and vegetation and no further action was recommended. Apache Tejo Wash will be further considered under Discharge Plan DP-1340 Sitewide Abatement.

1.4 AOC Requirements

The AOC between Chino and NMED became effective on December 24, 1994 and requires Chino to conduct the following work:

- Assess present STSIU condition in the investigation area associated with risks to public health and welfare of the environment;
- To the extent necessary to select a remedy, or remedies, evaluate alternative remedial technologies appropriate for the IU in the investigation area; and

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[3] Wildlife Reference North and South locations were sampled each year of community sampling to calibrate cover. The wildlife reference south location was originally thought to be a reference area but had lower pCu once sampled and became a “de minimis” location along with three bedrock reference locations that had lower pCu than 5 (see phytotoxicity report).

- Implement the selected remedy or remedies.

FS activities that were identified in the AOC Scope of Work and described in the FS Proposal (Arcadis 2011a) include, but are not limited to:

- Description of current situation;
- Treatability studies and identification and screening of potential applicable technologies;
- Development of remedial alternatives;
- Initial screening of remedial alternatives;
- Detailed evaluation of remedial alternatives;
- Description and justification of preferred alternative; and
- Production of the FS report.

This FS addresses the above bullets.

1.5 Organization of FS

This FS was prepared to determine and fulfil the needed data requirements of the AOC identified FS activities. The FS is organized as follows:

- Section 1.0: Introduction
- Section 2.0: Regulatory Components of the FS
- Section 3.0: Description of Current Situation: Soil
- Section 4.0: Description of Current Situation: Surface Water
- Section 5.0: Identification and Screening of Potential Applicable Technologies
- Section 6.0: Assembly and Development of Remedial Alternatives
- Section 7.0: Analysis of Alternatives
- Section 8.0: References

2. Regulatory Components of the FS

There are a number of regulatory components associated with an FS. Section 2.1 presents the specific FS tasks that are stated and required in the AOC associated with STSIU. Section 2.2 presents the ARARs associated with the STSIU. Sections 2.3 and 2.4 provide details on the RAOs and the Pre-FS RAC that have been developed for the STSIU. Finally, Section 2.5 describes the AOC STSIU study boundaries.

2.1 AOC FS Tasks

AOC FS Tasks were presented in the FS Proposal (Arcadis 2011a) and are updated herein based on additional work completed.:

Description of Current Situation

Updates to the current situation are detailed in Sections 3 and 4.

Treatability Studies and Identification and Screening of Potentially Applicable Technologies

Technologies were identified in the approved STSIU FS Proposal (Arcadis 2011a). There were no treatability studies identified but the Amendment Study is an example of an on-going treatability study that was started before the FS Proposal was submitted and approved. The technologies that were identified to carry forward are incorporated into remedial alternatives herein.

Development of Remedial Alternatives

Remedial alternatives were developed in the FS Proposal (Arcadis 2011a) and no updates were identified through the implementation of that proposal.

Initial Screening of Remedial Alternatives

The initial screening of remedial alternatives was completed in the FS Proposal (Arcadis 2011a) and no additional alternatives were identified for screening following the implementation of that proposal.

Evaluation of Remedial Alternatives

Remedial alternatives were evaluated in the FS Proposal (Arcadis 2011a) and no changes to that evaluation have been identified through the implementation of that Proposal. The remedial alternatives identified in the FS Proposal that were carried forward into the FS include the following:

Soil

- No Action
- Monitoring
- Excavation and Reuse
- Excavation and Disposal
- Limestone and Organic Matter Soil Amendment
- Tilling
- Ferrihydrite Soil Amendment
- Soil Cover

- Phytostabilization

Surface Water

- No Action
- Monitoring
- Excavation (In-Drainage, Upland, or Stock Ponds)
- In-Stream Removal of Suspended Sediments
- Limestone Treatment
- Sediment and Erosion Control

Description and Justification of Preferred Alternative

In the FS Report, Chino shall describe and justify its preferred alternative based on the criteria listed above.

2.2 Applicable or Relevant and Appropriate Requirements

Applicable or Relevant and Appropriate Requirements (ARARs) are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than the federal ARAR.

If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action (relevant) and are well suited to the conditions (appropriate) of the site. A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR.

The criteria for determining relevance and appropriateness are listed in the Code of Federal Regulations (40 CFR), Section 300.400(g)(2), and include general comparisons between the following:

- The purpose of the requirement and the purpose of the action;
- The medium regulated or affected by the requirement and the medium contaminated or affected at the site;
- The substances regulated by the requirement and the response action contemplated at the site;
- Any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the site;
- The type of place regulated and the type of place affected by the release; and
- Any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the site.

According to the USEPA CERCLA guidance, a requirement may be “applicable” or “relevant and appropriate” but not both (USEPA, 1988). Identification of ARARs must be done on a site-specific basis and involves a two-part analysis: first, a determination of whether a given requirement is applicable; and then, if it is not applicable, a determination of whether it is, nevertheless, both relevant and appropriate. When the analysis determines that a requirement is not applicable but is both relevant and appropriate, the requirement must be compiled with the same degree as if it were applicable.

ARARs are generally divided into three categories: chemical specific; location specific; and action specific in accordance with USEPA guidance (USEPA, 1988):

- Chemical Specific: Chemical specific ARARs are generally health or risk based numerical values or methods applied to site-specific conditions that results in the establishment of a cleanup level. Many potential ARARs associated with particular response alternative (such as closure) can be characterized as action-specific but include numerical values or methods to establish them so they fit in two categories, chemical-specific and action-specific.
- Location Specific: Location specific ARARs are included for environmentally sensitive areas including riparian and other hydrologic resources, and biological and other natural resources are the resource categories relating to location-specific requirements potentially affected by the STSIU remedial actions.
- Action Specific: Action specific ARARs are included for the potential remedial actions that will be used in the STSIU.

This classification was developed to aid in the identification of ARARs. Some ARARs do not fall precisely into one group or another. ARARs are identified on a site-specific basis for remedial actions where CERCLA authority is the basis for cleanup.

For the determination of relevance and appropriateness, the pertinent criteria were examined to determine whether the requirements address problems or situations sufficiently similar to the circumstances of the release or response action contemplated, and whether the requirement is well suited to the site. A negative determination of relevance and appropriateness indicates that the requirement does not meet the pertinent criteria.

To qualify as a state ARAR under CERCLA, a state requirement must be:

- A state law or regulation;
- An environmental or facility law or regulation;
- Promulgated;
- Substantive;
- More stringent than federal requirements;
- Identified in a timely manner; and
- Consistently applied.

To constitute an ARAR, a requirement must be substantive. Therefore, in some cases only the substantive provisions of requirements identified as ARARs in this analysis are considered to be ARARs. Permits are considered to be procedural or administrative requirements though may contain substantive requirements that are ARARs which must be attained and/or qualify as “to be considered” (TBC) materials that may be used in determining the necessary level of cleanup for protection of human health or the environment.

Provisions of generally relevant federal and state statutes and regulations that were determined to be procedural or not environmental in nature, including permit requirements, are not considered ARARs. CERCLA Section 121(e)(1), (42 USC Section 9621(e)(1)), states that “No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out in compliance with this section.” Consistent with 40 CFR, the term “on-site” is defined for purposes of this ARARs discussion as “the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementations of the response action.

In addition to ARARs, non-promulgated advisories, proposed standards, criteria, guidance, or policy documents developed by the federal or state government, or other information referred to as TBC materials may also be used in conjunction with ARARs to achieve an acceptable level of risk at a site. Although not legally binding, TBCs may be used when determining protective cleanup levels or response actions where no ARARs exist, or where ARARs alone would not be sufficiently protective of human health and the environment. Because TBCs are not ARARs, their early identification is not mandatory.

The state permit conditions for the Chino Mine shall be considered TBC materials and considered in the FS for developing remedial alternatives.

Chino had the primary responsibility for identifying federal ARARs for the STSIU. Potential federal ARARs that have been identified for the remediation of STSIU were determined in the RI (SRK 2008) and FS Proposal (Arcadis 2011a) and are presented in Tables 2-1, 2-2, and 2-3. Pursuant to the definition of the term “on-site” in 40 CFR Section 300.5, the area that is considered part of the remedial action is STSIU (see Section 2.5).

2.3 Remedial Action Objectives (RAOs)

This section identifies the environmental media for the STSIU where potentially unacceptable risks were determined to exist through the risk assessments completed during the RI, as well as the constituents determined to be responsible for the potential for unacceptable risk. This section also presents the specific RAOs developed for the STSIU for each media of interest.

RAOs are medium-specific goals designed to protect human health and the environment. RAOs serve to focus an FS and provide context for the overall scope of potential cleanup activities at a site. Each RAO specifies: the contaminant of concern; the relevant exposure routes and receptors; and an acceptable contaminant concentration or range of concentrations for each exposure pathway.

The STSIU RI referenced the completed STSIU HHRA and ERA to determine if any constituents present in the environmental media should be considered Constituents of Potential Concern (COPCs). The sitewide and STSIU-specific ERAs (NewFields 2006, 2008) considered sensitive representative receptors from a number of receptor classes including mammals, birds, plants, and invertebrates. NewFields evaluated direct contact for plants and invertebrates and incidental soil ingestion and food-chain transfer for birds and mammals. The RI also referenced the comprehensive HHRA performed by Gradient (2008) to determine if any chemicals present in environmental media at the site are responsible for potentially unacceptable risk to human receptors in the context of plans for future site use. Accordingly, the human receptor classes evaluated in the HHRA included current resident, future resident, trespasser, construction worker, rancher, industrial worker, recreator swimmer, and trespasser swimmer. Specific pathways considered during the HHRA included direct dermal contact with surface soil, incidental ingestion of surface soil, inhalation of surface soil, dermal contact with surface water, and incidental ingestion of surface water. The risk assessments were implemented according to appropriate guidance and methodologies, which along with the detailed results from the assessments, were previously presented in the STSIU HHRA and ERA reports (Gradient 2008 and NewFields 2006, 2008).

NMED, after reviewing the HHRA and ERA, concluded that arsenic, copper, and iron are potential soil-based risk drivers for at least one human receptor evaluated, and that copper and pCu are potential soil-based risk drivers for at least one ecological receptor evaluated for the STSIU. The Gradient HHRA and NewFields ERA will be discussed in detail in Section 3.1.1.

Based on the findings from the STSIU RI Report, HHRA and ERAs (SRK, 2008a,b, Gradient 2008, NewFields 2006, 2008), the RAOs for the STSIU include:

- Protection of human receptors, as represented by current and future resident or industrial workers, from exposure to arsenic, copper and iron from ingestion of contaminated soil.
- Prevent the ingestion of copper by the small ground-feeding bird (SGFB) receptor at levels that result in unacceptable population-level risks.
- Toxicity to vegetation or other biological elements of habitat should be reduced to levels that allow for a self-sustaining ecosystem and prevent adverse impacts on local wildlife populations or subpopulations. In areas where habitat function is degraded due to toxicity of elevated copper concentrations and/or decreased pH from either smelter emissions or contamination released from tailings impoundments, remedial actions should focus on the restoration of wildlife habitat.
- Restore water quality to water quality objectives that are protective of beneficial uses within reasonable timeframe and maintain existing water quality that complies with water quality objectives. RAOs should reduce the likelihood of contact between surface water and soils/sediments that contain heavy metal contaminants at concentrations that could cause deleterious effects to aquatic receptor populations.

2.4 Pre-FS RAC

In a letter dated September 16, 2010 and then amended via a dispute resolution letter dated March 3, 2011, NMED provided Chino with a Pre-FS RAC for the STSIU (NMED, 2010, 2011). Based upon the information documented in the ERA, HHRA, as well as the comments and input provided from all parties, NMED has determined the Pre-FS RAC values for soil and surface water as discussed below.

Surface Soil

NMED has determined a Pre-FS RAC for metals that potentially pose human health and ecological risk based on the information documented in the ERA, HHRA, and probability analysis. NMED established HHRA Pre-FS RAC values for arsenic, copper, and iron as follows:

- Arsenic: NMED selected the cancer target risk with a Pre-FS RAC of 27 mg/kg. This value is supported by the probability analysis (Arcadis 2010c,d,e) and is consistent with the range of arsenic clean-up levels previously set in New Mexico by USEPA.
- Copper: NMED selected the non-cancer risk human health Pre-FS RAC as previously determined for the Hurley Soils IU of < 5,000 mg/kg copper at private, commercial, and public developed properties.
- Iron: NMED selected the non-cancer risk Pre-FS RAC based on the probability analysis (Arcadis 2010c,d,e) of 100,000 mg/kg.

NMED established ecological Pre-FS RAC values for copper as follows:

- To reduce soil toxicity to plants from copper to pCu ≥ 5 where copper is > 327 mg/kg.
- To reduce soil toxicity to SGFB of 1,600 mg/kg. The SGFB Pre-FS RAC is applicable to the 95 percent upper confidence limit (UCL) of the area-weighted average concentration of copper in surface soil (0-6”) within exposure units in the STSIU. In addition, NMED required monitoring for copper concentrations in surface soil between 1,100 and 1,600 mg/kg.

Based on the final Pre-FS RAC issued in a letter dated March 2011, NMED stated:

> *Since the FS and ROD will be completed consistent with the NCP, new information can be used to refine RACs and selection of alternatives. This is supported by the NCP in §300.430(e)(2)(i) which states “Establish remedial action objectives specifying contaminants and media of concern, potential exposure pathways, and remediation goals. Initially, preliminary remediation goals are developed based on readily available information, such as chemical-specific ARARs or other reliable information. Preliminary remediation goals should be modified, as necessary, as more information becomes available during the RI/FS. Final remediation goals will be determined when the remedy is selected. Remediation goals shall establish acceptable exposure levels that are protective of human health and the environment…” It must be noted that NMED’s pre-FS RACs are equivalent to preliminary remediation goals referred to in the NCP.*”

Thus, Pre-FS RAC are consistent with the use of PRG by EPA in the NCP, and new information can be used to refine the Pre-FS RAC and selection of alternatives. Additional information is provided herein in Section 1.3 and Appendices A, B, C and D. As discussed in Section 1.3, based on discussions and field work conducted with NMED, soil sampling and vegetation community measurements were conducted in 2018 from new agreed-upon locations. Results were incorporated into calculations of DELs and PELs presented in the phytotoxicity study for four soil types (see Appendix C). The average PELs for pCu across the soil types ranged from 2.97 to 4.60, with the highest values in the flat rocky soil category. Based on this new information, the PELs are used to identify acres for remedial alternative evaluation herein. Moreover, percent cover, richness and OAT are used to further identify poor rangeland as described in the approved FS Work Plan (Arcadis 2011a).

In cases where the above criteria overlap for a given area, the constituent which requires the largest remedial footprint will be considered the “risk driver” and the remedial technology will be selected to address this “driver”. The selected remedial technology will be evaluated to confirm that all “non-risk driver” constituents are in compliance with their respective RACs. With the issuance of the Pre-FS RAC, constituents identified in the RI and risk assessment as COPCs are now considered constituents of concern or COCs. The FS and ROD will be completed consistent with the NCP. Final remediation goals will be documented in the ROD.

Surface Water

NMED selected the Pre-FS RAC for surface water based upon the State of New Mexico Standards for Interstate and Intrastate Surface Waters, Part 20.6.4 NMAC for risk to aquatic life. The Pre-FS RAC for all constituents is Part 20.6.4 NMAC, including all approaches and tools listed in the Code which provide options for site-specific application.

Ground Water

NMED discovered a data gap in the RI Report during the preparation of Pre-FS RAC letter. Drainage sediment sample results exceed the NMED Dilution Attenuation Factors (DAF) developed to protect ground water. Although this potential impact was included in the conceptual site model (CSM) and in the risk assessments, NMED requested Chino to further investigate this potential pathway. NMED requested that Chino collect additional samples from all the drainages that currently exceed the DAF 1 as listed in NMED’s Technical Background

Document for Development of Soil Screening Levels, Revision, 5.0 (NMED, 2009) or exceed background concentrations for the following COPCs: arsenic, barium, cadmium, copper, iron, molybdenum, and selenium.

Chino submitted a work plan on October 20, 2010 and NMED approved the work plan on November 10, 2010. Chino implemented the work plan in December 2010 with NMED participation. The samples were analyzed using 1) SPLP and 2) Acid-base Accounting (ABA) and the results were compared to Ground Water Quality Standards to determine if this potential pathway may impact groundwater and if potential remedial alternatives should be developed in the FS. The results showed that there is no risk associated with sediments leaching to groundwater; therefore, groundwater will not be evaluated as part of the STSIU FS. The results from the sampling effort were presented in the *Groundwater Quality Pre-Feasibility Study Remedial Action Criteria for Drainage Sediments* (Arcadis 2011b).

2.5 AOC Study Boundaries

As specifically described in the AOC Scope of Work (NMED, 1994), the STSIU includes all areas containing and proximal to Chino's copper smelter including the slag, all areas containing or which contained facilities ancillary to the primary smelter, and the soil adjacent or impacted by the tailings facility (excluding the Hurley Soils IU). The investigation area is contained in section 31 of T18S, R12W and sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31, 32, and 33 of T19S, R12W. The above township-range sections, as shown in Figure 2-1, include the town of Hurley, Chino operational area, and all tailings ponds; however, the town of Hurley and the former Hurley Operations Area are excluded from the IU because applicable remediation or closure of these areas are covered under separate regulatory activities. The western extent of the 1994 AOC area is Highway 180, the eastern extent is approximately a quarter mile east of the toe of Tailings Pond 7, and the southern extent is approximately 1 mile south of Tailings Pond 7.

The former Hurley Smelter was decommissioned and demolished in 2007. The Hurley Operations Area is bounded by the Town of Hurley to the west, Whitewater Creek to the northeast, Lake One to the east, and the tailings impoundments to the south. Current land uses adjacent to the former Hurley Operations Area are residential in the towns of Hurley and North Hurley, tailings disposal south of the operational area, and livestock grazing elsewhere. Chino owns the majority of land included in the STSIU and the majority of this land is currently leased for livestock grazing.

The above investigation area has been expanded over the last 15 years as sampling events have delineated the boundaries of the smelter impacted soils with greater accuracy. The current smelter investigation area now includes areas to the north, east, and west of the original Smelter Investigation Unit located in section 31 of T18S, R12W that have copper concentrations greater than the established background value of 327 mg/kg.

3. Description of Current Situation: Soil

The following sections describe the current understanding of the physical characteristics of the STSIU surface soil based on previous field investigations.

- Section 3.1 summarizes the conceptual site model,
- Section 3.2 addresses how the Pre-FS RAC may be applied across the relatively expansive area encompassed by the STSIU as exposure units, and
- Section 3.3 discusses the upland areas that require potential remedial action as a result of the evaluation.

3.1 Conceptual Site Model

The CSM for sources associated with the STSIU was originally presented in the RI Proposal for STSIU (SRK, 2004) as well as in the risk assessments (Gradient, 2008, NewFields, 2006, 2008). Figure 3-1 illustrates a CSM via pathway segments and mechanisms required to understand how potential contamination occurred, including the source, release and transport of mineral processing constituents. Primary sources listed in this CSM are historical mineral processing activities and tailing impoundments including historical and current facilities.

Soils within the STSIU were affected by historical stack and fugitive dust emissions from historical mineral processing activities associated with the former Hurley Operations area and the tailings area. The AOC Background Report (Chino, 1995) identified the primary sources of contamination in the former Hurley Operations Area resulting from historical smelting, milling, concentrating, and handling of copper bearing material. For the tailings area of the STSIU, the tailings impoundments are considered the primary source of constituents of interest that have the potential to affect environmental media. Both historical and currently operational tailing impoundment may have affected surrounding media; however, DP-214, DP-484 and DP-1340 address any groundwater impacts from the historical or current impoundments due to infiltration to groundwater. Other pathways such as historical run-off and fugitive dust emissions transported constituents in tailings to surrounding soil and drainages. Fugitive dust emissions from the tailings ponds occur when high winds mobilized tailings resulting in transport and subsequent deposition of constituents to the surrounding soil.

Prevailing winds tend to be south-easterly (Chino, 1995); therefore, surface soils in areas to the south and east of the former Hurley Operations Area and the tailings impoundments are likely to be the most affected by dryfall from these aerial sources. Following airborne deposition onto soils, metals and other inorganic constituents may be further redistributed by a combination of physical (air and water erosion) and/or chemical (leaching) processes.

Figure 3-1 identifies the following potential release mechanisms associated with affected surface soil:

- Direct Contact: Exposure associated with direct contact with affected surface soil;
- Re-suspension: Mobilization of affected surface soil to air by wind;
- Run-off: Transport of suspended or dissolved constituents in surface water run-off. Potentially affected sediments may be generated as a result of surface water erosion of surface soil;
- Infiltration: Infiltration of surface water through affected surface soil may potentially release constituents of interest from affected surface soil; and

- Absorption: Constituents from affected surface soil may bioaccumulate in garden foods that could be consumed by persons. In addition, grazing animals, either directly or through plant consumption, could ingest constituents from affected surface soil. Constituents could, in turn, be absorbed through consumption of these animals.

The potential exposure routes for current and future human receptors include:

- Inhalation;
- Ingestion of contaminated food items; and
- Direct contact (ingestion and dermal).

The potential exposure routes for current and future ecological receptors include:

- Direct contact (root uptake and incidental ingestion); and
- Ingestion (contaminated biota).

The above potential human health and ecological exposure routes were evaluated in the STSIU HHRA (Gradient, 2008) and STSIU ERA (NewFields, 2008). Since the completion and approval of the risk assessments, the STSIU has been naturally “limed” by the “white rain” event as described in Section 1.3. This natural event has shifted the geochemistry of the soils and affected the bioavailability of contamination in the STSIU, as documented in the *Year 5 pH Monitoring Report for STSIU* (Arcadis 2023).

In addition to the white rain event, historic sources to STSIU were fully reclaimed, as described further below in Section 3.1.2.

3.1.1 Previous Investigations

The upland soil in the STSIU was evaluated in the STSIU RI (SRK, 2008a,b), the HHRA (Gradient, 2008), and the ERA (Newfields, 2008) prior to the development and issuing of the Pre-FS RAC. The following sections summarize the findings of these three reports.

Remedial Investigation

The STSIU RI Proposal was completed by SRK in 2004 and the RI Report was submitted in 2006 and resubmitted in 2008 with supplemental data (SRK, 2008a,b). Surface soil samples were taken at 165 locations in the STSIU during the RI sampling efforts (SRK, 2008a,b).

The RI concluded that copper is the primary metal elevated in surface soils in the STSIU. In addition, arsenic, cadmium, and iron were also detected above the decision criteria, but their respective concentrations largely fall within the range of reference, and elevated concentrations of these metals generally fall within the footprint of copper concentrations. Consistent with conclusions reported in the AOC Background Report (Chino, 1995) and the *Phase II Remedial Investigation Report for the Ecological Investigation Unit* (Arcadis 2001), copper concentrations in surface soil exhibit strong spatial characteristics with decreasing concentrations as distance in the direction of prevailing winds increases (SRK, 2008a).

Human Health Risk Assessment

In 2008, Gradient evaluated the risks to human health posed by constituent concentrations in the STSIU. Gradient calculated both cancer risks and non-cancer hazards for potential receptors on the site. The methodology used for this risk assessment was consistent with USEPA guidelines and used conservative, default assumptions, whenever site-specific data were not available. The receptors evaluated in the HHRA included current and future residents, adolescent recreators, adolescent trespassers, ranchers, construction workers, and industrial workers. The upland risk assessment evaluated exposures to soil, windblown dust in air, and locally produced food items.

Gradient indicated that site exposure could result in unacceptable cancer risks for current and future residents. However, these cancer risks are largely driven by the consumption of locally grown foods. Gradient stated that the “consumption of locally grown food” pathway was evaluated using conservative assumptions and tends to overestimate risk. Gradient also found that 90% of the excess lifetime cancer risk is attributed to arsenic. All other receptors (recreators, trespassers, ranchers, construction workers, and smelter workers) did not have unacceptable cancer risk.

The HHRA indicated that site exposures could result in unacceptable non-cancer hazards for residents in all five exposure areas. However, these non-cancer hazards are also largely driven by consumption of locally grown foods. Gradient stated that the “consumption of locally grown food” pathway was evaluated using conservative assumptions and tends to overestimate risk. Furthermore, all residential non-cancer risks in the STSIU were lower than residential RME non-cancer hazard calculated for the reference area. All other receptors (recreators, trespassers, ranchers, construction workers, and smelter workers) had acceptable non-cancer hazards.

Gradient evaluated copper risks separately using a probabilistic method, only for ingestion of soil. The most sensitive endpoint for copper toxicity is nausea; therefore, copper risks were based on estimating the annual number of nausea episodes that an individual might experience, at a given soil copper concentration. Overall, the industrial worker in the smelter area had the highest copper risk, with an estimated 65 nausea events per year.

NMED established human health RACs for three constituents, including arsenic, copper, and iron, as discussed in Section 2.4.

Ecological Risk Assessment

The Site Wide BERA (NewFields, 2006) was completed and used as the basis to streamline the IU-specific ERA for the STSIU (NewFields, 2008). These ERA reports evaluated the risks from soil to terrestrial receptors. The methodology used for this risk assessment was consistent with USEPA guidelines, and used conservative, default assumptions, whenever site-specific data were not available. The methodology and parameter selection are described in Technical Memo 1 – ERA Workplan and the sampling and analytical approach are described in Technical Memo 2 (Schafer and Associates, 1999a, 1999b). The receptors evaluated in the terrestrial ERA included terrestrial vegetation, herbivorous birds, omnivorous birds, raptors, herbivorous mammals, omnivorous mammals, ruminants, and mammalian predators. The risk assessment evaluated exposures from direct contact, incidental soil ingestion, and ingestion of prey items.

It was concluded that the risks to plants and wildlife were primarily related to elevated copper concentrations and depressed pH in soil (NewFields, 2008). The risks to the SGFB, the most sensitive receptor evaluated, appear to be elevated in the STSIU due to exposure to copper. The potential for risk, for both plants and the SGFB, is greatest in the areas immediately to the east of the smelter and the tailings impoundments and decreases with the increased distance to the east of those features.

Since 2008, when the NewFields STSIU ERA was approved by NMED, there has been further analysis of the risk to the SGFB. The following studies and updated exposure parameters have led to a decrease in predicted exposure levels for the SGFB.

- Ingestion Rate of Food and Soil: The ingestions rates used by NewFields in the ERA were updated to more recent allometric-based values in the literature (Nagy, 2001).

- The dose equation was updated to model all potential dietary intakes in dry weight.
- Insect tissue concentrations: Additional insect tissue was collected in 2010 to supplement the tissue that was collected and analysed for in the ERA. The results of this sampling event are presented in the *Terrestrial Invertebrate Copper Bioaccumulation and Bioavailability Study* (Arcadis 2010a). These results were used to update the relationship between copper in soil and insect tissue and to more accurately estimate bioavailability from insect tissue.

When the above refinements are incorporated into the dose model for the SGFB, there is a decrease in the predicted exposure associated with the SGFB. The approved Site Wide ERA (Newfields, 2006) documents a prediction of population level risk based on the earlier limited data. With the uncertainties in mind, Chino developed and NMED approved the *Terrestrial Invertebrate Copper Bioaccumulation and Bioavailability Study for STSIU* (Arcadis 2010a), and subsequently field data were collected with NMED. The results of the data indicate that exposure levels have changed for the SGFB. If the Site-Wide ERA had been formally amended to include such data, the updated exposure parameters would result in lower LOAEL HQs and would update the conclusions of the Site-Wide ERA (Arcadis 2011d).

As summarized in Section 1.3, the amendment study, pH monitoring report, and draft phytotoxicity report, were submitted subsequent to the approval of the FS Proposal, and all three are referenced herein as Appendices A, B, and C, respectively.

3.1.2 Previous Reclamation and Interim Actions

The Hurley Mill and Smelter were closed and demolished in 1985 and in 2003 and 2007, respectively, and the historical mineral processing operational area was fully reclaimed with 3 feet of borrow fill including slag, improving overall air quality, and eliminating the source of acid and copper to STSIU soils. Closure plans were implemented under DP-1340 for the reclamation of historical tailing impoundments (Tailings Pond 1, 2, B, C, 4, 6E and 6W) (Golder 2013a,b). The Town of Hurley, which is located in the HSIU, was remediated in 2006 and 2007. In addition, also under DP-1340, Condition 90, the Lake One Closure Plan was submitted to NMED in December 2012, approved by NMED, implemented in 2013 (EMC^2 2014). Borrow fill for reclamation was taken from within the STSIU boundaries, outside of the operational footprint as discussed in Section 1.3.

Additionally, interim actions were completed in 2008 and 2012, as summarized in the *STSIU Interim Removal Action Completion Report* ("Golf Course IRA") and the *Supplemental STSIU Interim Removal Action Completion Report ("Railroad IRA")* (ARCADIS, 2009 and Golder, 2013c). Specifically, these areas included the area west of Highway 180, the South Golf Course, the North Golf Course, the Alley Way adjacent to the South Golf Course, the area east of Highway 180, and other sites located at the end of the South and North Golf Courses. The objective of the interim actions were to remove soils where copper concentrations were greater than 5,000 mg/kg (lateral delineation) at 0 – 1" based on the 2005 NMED-approved residential RAC for the Hurley Soils IU (and later formally issued in 2011 as pre-FS RAC for STSIU), as the acres were deemed future residential as extensions of the town of Hurley and fall within the current city limits. Within the areas with higher than or equal to 5,000 mg/kg, soils were removed vertically until the copper concentrations were less than 2,700 mg/kg or resistance met.

Later interim actions were also completed in 2014 and 2019 as summarized in the *STSIU Razorback Ridge Interim Remedial Action Completion Report* (Golder 2015) and *the B-Ranch Interim Remedial Action Completion Report* (Arcadis 2020). The Razorback Ridge IRA is located east of Lake One in areas adjacent to the Whitewater Creek Diversion Channel and James Canyon. The B-Ranch IRA is located adjacent to the reclaimed slag and the

Golf Course IRA with Whitewater Creek bounding the east side of the site. The objective of the IRAs was to remove soils in areas with copper concentrations higher than 5,000 mg/kg, delineated laterally, as per the STSIU pre-FS RAC. As the soil removed from the Razorback Ridge Area was being utilized as borrow fill material, removal depths were at 1 to 2 feet depth and only post removal sampling was performed. Post-confirmation and post-removal data associated with the above-described removals was incorporated into Chino's maps and databases, as summarized in Table 3-2.

3.1.3 FS Proposal Data Collection

The FS Proposal summarized additional sampling needed to refine the potential remedial areas for all constituents that exceed their respective Pre-FS RACs (Arcadis 2011a). Additional soil samples were collected to more accurately define the current extent of contamination for copper and pCu in surface soil. The exact sampling locations and methods were presented in the Upland Sampling Work Plan (Appendix A) of the FS Proposal.

Additionally, exposure units are delineated via desktop evaluation with field verification. The Upland Sampling Work Plan (Appendix A) of the FS Proposal described the methodology that is used to perform rangeland and drainage habitat surveys to better understand the potential habitat units in the STSIU. NMED required that the SGFB copper Pre-FS RAC be applied as a 95UCL area-weighted average over a habitat unit. Through use of vegetation alliance polygons (DBS&A 1999, Newfields 2006), SGFB habitat units are defined for the STSIU and presented herein. Similarly, the pCu Pre-FS RAC is applied as an average concentration over a habitat unit, as described in Appendix D. Datasets and exposure units are described further below in Section 3.2.

3.2 Nature and Extent of Contamination

According to the AOC, the soils of concern in the STSIU are the areas that exceed the Pre-FS RAC values described in Section 2.4 of:

- < 5,000 mg/kg copper at 0-1" bgs,
- 1,600 mg/kg copper surface weighted 95 UCL for a habitat unit for 0-6" bgs,
- 27 mg/kg arsenic at 0-1" bgs, and
- 100,000 mg/kg iron at 0-1".

In addition to the Pre-FS RAC described above, based upon new information submitted herein and summarized in Sections 1.3 and 2.4, pCu less than 5 with soil copper concentration greater than 327 mg/kg for 0-6" bgs as well as richness, cover and rangeland condition (measured with the OAT score) are used to identify acres of soils of concern.

There are three constituents that exceed NMED's Pre-FS RAC for soil in the STSIU. Copper and iron have exceedances of the NMED human health criteria, while copper and pCu fail their respective ecological criteria. Each constituent is described further in sub-sections below.

3.2.1 Arsenic

Of the 165 samples collected for the STSIU RI, there are no exceedances of the human health Pre-FS RAC of 27 mg/kg (Table 3-1). Therefore, arsenic will not be further evaluated in the STSIU FS.

3.2.2 Copper

There have been approximately 450 pre-IRA surface soil samples (0-1” bgs and 0-6” bgs) collected in the STSIU through December 2012. These samples were taken during the following investigations: AOC Background Report (Chino, 1995), Site Wide ERA (NewFields, 2006), STSIU RI (SRK, 2008a,b), pH monitoring (Arcadis 2023), amendment study (Arcadis 2017), phytotoxicity and community study (Arcadis 2018), and the STISU FS Upland Sampling Plan (Arcadis 2011a). The results from the FS Upland Sampling Plan are discussed in Appendix D. About 1,500 samples were collected during four IRAs: Golf Course (Arcadis 2009), Railroad (Golder 2013c), Razorback Ridge (Golder, 2015), and B-Ranch (Arcadis 2020). Table 3-2 summarizes all samples collected in STSIU. All IRA delineation and confirmation samples were analysed using XRF and corrected using the regression equation based on a subset of the samples analysed by a laboratory. The regression equation and methodology were presented in the IRA Completion Reports.[4] All borrow areas, which were excavated at depths of 1 to 12 feet, were assumed to have copper concentrations at background, equal to 327 mg/kg.[5]

The risks from copper in the STSIU are driven by exceedances of the pre-FS RAC for both human health and ecological receptors. The human health risks were evaluated with copper sampled in the 0-1” bgs interval, sieved to < 0.25 mm. The risk to ecological receptors is evaluated using the soil horizon of 0-6” bgs, sieved to < 2 mm. Historically, most copper samples were sampled from the 0-1” bgs interval to determine potential risk to human health. Using the methodology presented in Appendix A of the FS Proposal (Arcadis, 2011a), for ecological evaluations, the copper results from the 0-1” were adjusted to 0-6” using the median ratio between the two depths (0.7 unless in windblown tailing area, where it was 1.5, Table 3-2). This adjustment provided a more robust 0-6” dataset to evaluate the remedial alternatives. The locations and concentrations of the copper samples evaluated in the pre-IRA dataset are shown in Figure 3-2. As presented in Figure 3-2, copper concentrations were the greatest to the east of the historical smelter and decrease with increased distance from the historical smelter’s location. There were also areas of elevated copper on the north, south, and west of the town of Hurley from smelting and other historical mineral processing activities. Similar to the elevated areas to the east, copper concentrations to the north, south and west decrease with increased distance from Chino’s operational area.

As discussed in Section 2.4, the March 3, 2011 NMED Chino AOC Informal Dispute Resolution STSIU memo states that the copper SGFB Pre-FS RAC value of 1,600 mg/kg is intended as the 95UCL area-weighted average concentration within an exposure unit, and the exposure unit should be delineated based on habitat. The habitat polygons represented by the vegetation alliance map developed by DBS&A (1999) (and referenced by NewFields (2006)) were used as habitat units for upland areas (Figure 3-3) as discussed in the approved FS Proposal (ARCADIS, 2011a).[6] During the 2011 field effort, a subset of the STSIU drainages was evaluated to determine if the avian habitat along the drainage banks was different from the adjacent upland. It was determined that the STSIU drainage banks were not significantly different from the adjacent upland (Appendix D); therefore, the existing vegetation alliance polygons that encompass the upland and banks of the drainages were used as the ecological exposure unit for SGFB, without differentiating between upland and banks of drainages.

After determining the best interpolation method for copper, the datasets for each exposure unit for the SGFB were determined by intersecting the ArcGIS interpolated copper Thiessen polygons with the DBS&A vegetation

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[4] The Razorback Ridge and B Ranch Completion Reports did not report corrected XRF data; however, paired datasets with XRF and laboratory copper results were reported and a regression was developed and used to correct the data reported in Table 3-2.

[5] As part of the borrow excavation, some surficial wind blown tailings were also removed but not sampled. Any older samples previously located in these areas were substituted with 327 mg/kg before performing the interpolation.

[6] Alliance polygon size shifted for several polygons based on updates to the habitat map and an addition of “mine facilities/other” category.

alliances for the post-IRA dataset (includes effect of borrow removal) as shown in Figure 3-4. All Thiessen polygons with either lab or XRF sample results[7] that exceed the human health RAC of 5,000 mg/kg have already been remediated for compliance with the human health RAC.[8] Based on the monitoring criteria for the avian pre-FS RAC, exposure units (or habitat polygons) which intersected a copper Thiessen polygon with a concentration ≥ 1,100 mg/kg were retained for further evaluation.[9] For each retained exposure unit, a 95UCL area-weighted average concentration was calculated, using the percentile bootstrap method.[10] Table 3-3 includes the exposure units that have 95UCL concentrations in excess of 1,100 mg/kg. The colors of the exposure units in Figure 3-5 identify which of these post-IRA exposure units require remedial technology evaluation, additional monitoring, or no further action to be in compliance with the avian pre-FS RAC, depending on the 95UCL copper concentration of the unit. There were no exposure units with 95UCL concentrations exceeding the avian RAC of 1,600 mg/kg. Exposure units in yellow have a 95UCL between 1,100 mg/kg and 1,600 mg/kg and will require additional monitoring for the protection of the small ground-feeding bird (alliance polygons 1-3, 10-16, and 88-15). Exposure units in green do not require any additional action.

3.2.3 Iron

Two of the 165 soil samples collected for the RI and analysed by EPA 6010 exceed the human health Pre-FS RAC of 100,000 mg/kg (Table 3-1). The locations of these samples (SS145 & SS148) are along the eastern border of Tailing Dam 7 as seen in Figure 3-6. The iron results from SS145 & SS148 only slightly exceed the human health Pre-FS RAC with concentrations of 141,000 mg/kg and 123,000 mg/kg, respectively. However, the area encompassing these two sample locations fall within the currently operational Tailing Pond 7 footprint and will be addressed under the CCP and DP-1340. Thus, iron is not retained for further evaluation.

3.2.4 pCu

Cupric ion activity (pCu) was directly measured in 0-6” bgs soil at 17 sites in the STSIU in 1999 and was strongly related (R2 = 0.97) to copper concentrations and pH in the following equation (upland equation from Sitewide ERA, Newfields, 2006):

$$pCu = 7.34+(0.93*pH)-(1.15*\ln[Cu_{tot}])$$

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[7] Results based on 0-1” and sieved to < 0.25 mm.

[8] There are sample points identified in Table 3-2 with copper greater than 5000 mg/kg where bedrock was noted (where the sample result represents dust that could be wiped off the rock), or steep slope, infrastructure, or ROW was encountered and thus cannot be remediated.

[9] Appendix A of the FS Proposal included Table 3 which summarized vegetation polygons with copper greater than 1,600 mg/kg. The number of polygons was increased to 18 to include those with a maximum concentration greater than 1,100 mg/kg. There were 298 samples across 9,121 acres identified in the FS Proposal representing polygons with maximum concentrations greater than 1,600 mg/kg, and 1,922 samples across 9,760 acres herein representing polygons with maximum concentrations greater than 1,100 mg/kg. Bedrock samples where the sample result represents dust that could be wiped off the rock were removed from the dataset for the bird Pre-FS RAC evaluation. Older sample locations removed via an IRA were changed from the reported result to 327 mg/kg (NMED background value noted in the Pre-FS RAC).

[10] 5,000 iterations (USEPA 2010a) implemented by a macro developed for EXCEL. Several polygons had more samples than the maximum allowed by the macro (29-1, 137-7, 137-8 and mine facilities/other) and the lowest weight samples had acreages binned and a spatially weighted average used so macro could run due to array size. Bedrock sample points were removed in the post-IRA copper dataset evaluation. Samples located in borrow were substituted with background (327 mg/kg). Polygon 1-2 was overlapping a borrow pit on the south side of Hurley and was reclaimed. Polygon 128-7 is a stock tank and the upland surrounding it was added to Polygon 138-8.

This equation was applied to available copper and pH data sampled after the white rain event at 0-6" bgs and sieved to < 2 mm to estimate pCu and its spatial distribution on STSIU (Table 3-4). Post-white rain samples best define areas that might require remediation because they best represent current conditions. Of 155 pCu locations, 102 were sampled in the STSIU after the white rain event. These 102 samples did not fully cover the outer edges of the STSIU, however, and 56 pre-white rain samples were added to fill in the gaps (plots shown in Figure 3-7 and Table 3-4). All pre-white rain samples used to bound the post-white rain samples had pCu > 5 with the exception of a few locations directly north of Hurley and just east of Tailing Pond 7. The use of pre-white rain pCu concentrations to develop the pCu contour map in Figure 3-8 is conservative as there is no new source of acidity and natural attenuation is currently taking place.

As discussed in Section 1.3, the results of the 5-year pH Monitoring Study showed that the 2008 white rain benefitted the STSIU soils by increasing the pH and pCu of the acidic soils, making copper less bioavailable. The increase in pCu led to a decrease in the uptake of copper into living organisms and improved wildlife and rangeland habitat as a result. In addition, the potential of STSIU soils to generate acid is consistently low in most areas (Arcadis 2017 in Appendix B).

Using the above calculated pCu dataset, pCu contours were developed using natural neighbor[11] interpolation as shown in Figure 3-8. As proposed in the FS Proposal, Chino selected the pCu exposure units to be the polygon boundaries defined by combinations of different soil and vegetation types. These are the same boundaries that were used for the rangeland condition analysis in Woodward Clyde (1997) and thus are referred to as "rangeland polygons" (Figure 3-9). Only rangeland polygons that intersected average pCu < 5 and copper > 327 mg/kg (i.e., below the Pre-FS RAC) that failed the criteria below for rangeland (OAT score) and wildlife habitat quality (richness and cover) were retained for further remedial evaluation. The criteria remove polygons from remedial consideration where the destruction of the existing vegetation and inevitable increase in soil erosion associated with remediation could lead to a loss of long-term environmental benefits to the vegetation, causing more harm than good.

- Except for bedrock, if the observed apparent trend (OAT) score of the rangeland polygon was ≥ 22 for all soil categories, the polygon was considered to have "fair-good" rangeland condition (acceptable condition) and, therefore, was excluded from further evaluation. If the OAT score was < 22 (or < than 13 for bedrock, see Attachment A of Appendix D), the polygon's rangeland condition was considered "poor" and it was retained for further evaluation. The cutoff of 22 was based upon data in 1997 rangeland condition datasheets (see Woodward Clyde 1997) showing most rangeland polygons had fair to good condition with OAT ≥ 22 on STSIU, as described in the approved FS Workplan (Arcadis 2011a). The 2011 OAT scores (see Appendix D) were used to determine current rangeland condition for this FS.
- If the percent vegetation cover of a rangeland polygon was ≥ a targeted percentage of a reference mean area value based on variability of the background value of its soil category, the polygon was considered to have "acceptable" cover for wildlife habitat (see Attachment A of Appendix D for details). Flat granular soil, flat rocky soil, bedrock (> 60%), and steep slopes are the four soil categories with different targeted percentages. Unacceptable polygons based on cover were retained for further evaluation.
- If the vegetation species richness of a rangeland polygon was ≥ a targeted percentage of reference area mean values based on variability of the reference values of its soil category (Attachment A of Appendix D),

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[11] Natural Neighbor was used, rather than kriging discussed in the Work Plan, because the final dataset supplemented with 2011 data did not produce a semi-variogram that met assumptions of a kriging model, as discussed in Appendix D.

the polygon was considered to have "acceptable" richness for wildlife habitat. Unacceptable polygons were based on richness were retained for further evaluation.

OAT scores, percent vegetation cover, and species richness for each polygon were obtained using remote-sensing-based maps developed from Ikonos imagery that covered the site on September 4, 2011 (Appendix D). These maps were classified into two categories: acceptable and unacceptable, as discussed above. evaluated for accuracy using the percent cover and species richness that were sampled in the field on 100 ft^2 plots and the OAT score data collected on 200-m transects that were alongside the plots in 2011, 2014, or 2018 (plots are shown in Figure 3-10, see Appendix D for details). All field sample locations had been grazed, as almost all of the STSIU has been grazed, and therefore the criteria for success was a comparison to reference plots.[12]

All plots with field data for vegetation cover and species richness were used to evaluate map accuracy because the locations were independent of the high and low value endpoints used to calibrate the vegetative cover model and training sites for richness. However, for rangeland condition (OAT score), 3/4 of the ground samples were used for training and thus only 1/4 of the samples were used for accuracy assessment (see Appendix D). The accuracy of the OAT score, vegetation cover, and species richness maps in identifying the two classes (acceptable vs. unacceptable) was relatively good at 88%, 74%, and 71%, respectively, meeting the goal of at least 70% accuracy (Tables 3-5, 3-6, and Appendix D).

For the final classification of a rangeland polygon as containing vegetation that may have been degraded in quality by pCu, the polygon had to be rated unacceptable for the OAT score (rangeland condition) and unacceptable for either richness or cover (wildlife habitat quality). The retained rangeland polygons classified as unacceptable (overlaid on the four soil categories) with pCu lower than the pre-FS RAC where copper is > 327 mg/kg are shown on Figure 3-11. The mapped acres in Figure 3-11 with pCu < 5 that had greater than 327 mg/kg copper were 796 acres of bedrock, 218 acres of steep sloped areas (steep slope defined as > 13%), and 415 acres of flat rocky soil areas. Because vegetation response to pCu varies by soil category and its buffering capacity (see Appendices C and D), the retained rangeland polygons were further evaluated as to whether their average pCu exceeded their PEL based on the polygon's soil category, as shown in Table 3-7 and described in Appendix D. If a retained rangeland polygon had an average pCu ≥ its PEL, it was removed from further analysis.

The pCu contour map in Figure 3-8 represents the post-white rain conditions before more recent interim actions and soil removals described earlier occurred. Areas reclaimed or with wind-blown tailing or borrow material removal were assumed to have pCu above the pre-FS RAC of 5 because depths over one to 12 feet were excavated (copper and pH effects are in shallower layers). These areas and associated polygons dominated by these areas were excluded from further analysis.

The retained rangeland polygons after accounting for areas already reclaimed or removed are largely dominated by flat rocky areas and exposed bedrock (Figure 3-11), with the latter mostly classified as Mountain Mahogany Shrubland Alliance in the DBS&A vegetation alliances. To further evaluate the bedrock areas, Chino worked with NMED in September 2012 to compare bedrock areas within the STSIU to an agreed upon reference bedrock area outside of the STSIU. However, NMED later deemed the area selected to not to be an adequate bedrock

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[12] Based on the FS work plan that specified grazed plots will be evaluated for habitat quality by comparing to reference plots. The plots included one north- and one south-facing grazed "wildlife reference" plot and an "overgrazed reference" plot (Figure 3-13). However, the "wildlife reference plot south" and "overgrazed reference" plot were downgraded to site plots with "de minimis" impacts after reviewing their pCu estimates when chemistry was later collected (see Appendix C and D) and were not used as reference plots. Eight additional reference plots, representing the four major soil categories on the site were sampled in 2018 and, along with previously collected data on two other reference plots (SPS- and wildlife reference plot north in Figure 3-11) were used to estimate target thresholds, as described in Attachment A of Appendix D.

reference area because it was found to have pH lower than background (Appendix D). A reference area study was initiated in 2018 to identify adequate references areas east of the former smelter that would represent all four soil categories, including bedrock (see Attachment A to Appendix D). Using the observation and numeric results from that study, Chino excluded three of the four soil categories (including bedrock) from further consideration for remediation, as their mean concentrations in all exposure units were less than their respective PEL. The exception was the flat rocky category, which had exposure units exceeding the rocky flat PEL (Table 3-7). Thus, the retained rangeland polygons were all in flat rocky soils with average pCu ≤ 4.6, which is the flat rocky PEL, and the acreage of these polygons totaled 113 (Figure 3-12).

3.3 Soil Exposure Units to be Evaluated for Remedial Alternatives

This FS evaluates all areas where Cu in soil is greater than 1600 mg/kg, Cu in soil is within the monitoring range of 1100 – 1600 mg/kg, and pCu in soil is equal to or less than the PEL for the soil category (which is 4.6 for flat rocky soils) and considers which technologies are feasible. There are no polygons with a 95UCL area-weighted average for Cu greater than 1,600 mg/kg and there are three polygons carried forward for monitoring: 1-3 (23 acres), 10-16 (71 acres), and 88-15 (46 acres). There are 113 acres carried forward for the pCu evaluation.

4. Description of Current Situation: Surface Water

4.1 Conceptual Site Model

As discussed in the AOC Background Report (Chino, 1995) and the STSIU RI (SRK, 2008a,b), the surface waters[13] and drainages in the STSIU include Bolton Draw, Rustler Canyon, Martin Canyon, and other un-named tributaries of Whitewater Creek and Lampbright Draw. Previous investigations including the RI and ERA have noted the majority of these drainages are considered ephemeral, with surface water flow generally occurring during and immediately after a precipitation event. Other than these drainages, the remaining surface water bodies present in the STSIU are livestock watering tanks. The livestock tanks are generally designed to catch surface water run-off and/or spring or well water, and to hold water for extended periods of time.

Fate and Transport of COCs in STSIU Drainages

The primary sources of surface water impacts in the STSIU drainages are due to the presence of COCs in surface water runoff and leaching of COCs from sediments (Figure 3-1).

Surface Water Run-off

For the STSIU drainages, runoff from the upland environment is considered to be a source of potential COC impacts to surface water. COCs from COC-affected soils, from either smelter emissions or fugitive dust, have the potential to be sorbed to/incorporated into suspended particles or dissolved in runoff during precipitation events, leading to increased total and dissolved surface-water concentrations of COCs in the receiving drainages.

Leaching from Sediments

STSIU surface water also has the potential to be affected by the remobilization of COCs from sediments in drainages during stream flow events. Constituents in COC-affected sediments, derived from smelter emissions, historical upland runoff, or fugitive dust, may be remobilized during precipitation events, leading to possible increased total and dissolved surface water COC concentrations in the receiving drainages. In addition, leaching of COCs from COC-affected sediment may occur during times when water is present in a drainage after a storm event.

The leaching potential of sediments in STSIU drainages was evaluated for samples collected at select locations within the STSIU during a December 2010 sampling event, and the results were reported in the *Groundwater Quality Pre-Feasibility Study Remedial Action Criteria for Drainage Sediments* (ARCADIS 2011b). These results demonstrate that, with the exception of copper, sediments in the STSIU drainages do not have the potential to leach COCs to surface water at concentrations that might adversely affect the surface water quality at concentrations above acute aquatic life criteria.

Summary

The primary mechanisms for loading of COCs to surface water in STSIU drainages is transport of metals in hill slope runoff (dissolved COCs as well as COCs associated with soil/sediment) derived from COC-affected soil in the STSIU. Since sediments in drainages are derived from hill slopes above the drainage, the presence of COCs in hill slope runoff, surface water, and sediments are intimately linked.

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[13] The term “surface waters” is used in this document to reflect the common meaning of the term, not any legal meaning. Use of this term is not intended to imply that there has been a determination that any particular surface water or drainage constitutes a “surface water of the state” or “waters of the United States.”

Fate and Transport of COCs in Stock Tanks

Stock tanks that receive the majority of their water from surface runoff are a key focus for the CSM because the COC sources described above for surface water will affect the quality of water in the stock tanks. Stock tanks might also receive water from springs or windmill-pumped groundwater, but these tanks do not have a large surface-water runoff component. The water quality in stock tanks may also be affected by the potential regeneration of COCs stored in stock tank sediments.

Surface Water Inflow

Stock tanks receive the majority of their water from surface drainages, which in turn receive the majority of their water from surface runoff. As stated above, there is potential for COCs in soils to be sorbed to/incorporated into suspended particles or dissolved in runoff during precipitation events. In addition, leaching of COCs from drainage sediments and mobilization of COC-affected sediments may occur during the brief period of time when stream flow occurs. These mechanisms may lead to input of dissolved and solids-associated COCs to the stock tanks during runoff events.

Cycling of COCs from Sediments

For stock tanks, the cycling of COCs from sediment to surface water may present a continued source of COC impacts to stock tank surface water. If there is no outflow from a stock tank, all COC-affected sediments transported to a stock tank during a runoff event will accumulate in the stock tank. These COC-affected sediments may present a long-term COC source for stock tank surface water. When a new inflow event occurs, the already present mass of COCs in the stock tank is increased by the constituents present in the incoming surface water. The combination of COC-affected surface water and the remobilization of COCs from COC-affected sediments in the stock tanks may result in the potential for COCs in stock tank water to exceed surface water criteria.

Summary

The majority of the mass of COCs in stock tank surface water is derived from inflow during runoff events. Cycling of COCs from COC-affected sediments that accumulate in the stock tanks may result in release of additional COCs to surface water in the stock tanks.

Surface Water Conceptual Site Model

STSIU surface water, contained in drainages and stock tanks, has the potential to be affected by runoff interacting with COC-affected surface soil and sediment during storm events, and ongoing leaching of COCs from COC-affected sediments during times when water remains within a drainage or stock tank. The CSM for STSIU surface waters (Figure 3-1) identified the following potential exposure pathways associated with COC-impacted surface water:

- Direct Contact: Exposure associated with direct contact with affected surface water;
- Ingestion: Exposure associated with ingestion of affected surface water; and
- Absorption: COCs from affected surface water might bioaccumulate in foods that could be consumed by grazing animals. COCs could, in turn, be absorbed through consumption of these animals.
- The potential exposure routes for current and future human receptors include:
- Direct contact (ingestion and dermal).

The potential exposure routes for current and future ecological receptors include;

- Direct contact (dermal contact);
- Ingestion (drinking water); and
- Absorption (diet-borne exposure).

The above potential human health and ecological exposure routes were evaluated in the STSIU human health risk assessment (HHRA; Gradient, 2008) and ecological risk assessment (ERA; NewFields, 2006, 2008).

4.1.1 Previous Investigations

Remedial Investigation

The STSIU RI was completed in 2004, and then revised with the inclusion of new data and resubmitted in 2008 (SRK, 2004; SRK, 2008a). Twenty-four surface water samples were collected at 16 locations in the STSIU and were used to evaluate surface water quality during the RI (SRK, 2008a). Those results were presented in the Addendum to the RI (SRK, 2008b).

During the RI sampling, aluminium, barium, beryllium, boron, cadmium, calcium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, vanadium, and zinc were detected in STSIU surface waters. Of these detected constituents, only cadmium, copper, and lead were detected at concentrations that exceeded the chronic aquatic life criteria (SRK, 2008b). Lead concentrations were not detected above acute aquatic life criteria. Cadmium concentrations exceeded acute criteria in three drainage locations and two stock tanks. Copper concentrations were consistently above acute criteria in drainage and stock pond locations.

Human Health Risk Assessment

The HHRA (Gradient, 2008) evaluated data generated from surface water samples collected within the STSIU. The risk assessment calculated cancer risks and non-cancer hazards for potential receptors on the site. The methodology used for this risk assessment was consistent with USEPA guidelines and used conservative, default assumptions whenever site-specific data were not available. Gradient evaluated two scenarios, the recreational swimmer and the trespasser swimmer, to determine the potential risk from exposure to STSIU surface water.

Gradient determined that site exposure to surface water did not result in unacceptable cancer risks or non-cancer risks for either the recreational swimmer or the trespasser swimmer scenarios for any COCs identified for the STSIU.

Ecological Risk Assessment

The ERA (NewFields, 2008) evaluated the risks from surface water to aquatic receptors. The methodology used for this risk assessment was consistent with USEPA guidelines and used conservative, default assumptions, whenever site-specific data were not available. The receptors evaluated in NewFields' ERA included amphibians, aquatic invertebrate communities, and fish communities. NewFields only evaluated direct contact exposure for the above aquatic receptors.

The ERA showed that where surface water exists in the STSIU, the COCs of most concern were cadmium, copper, and lead (NewFields, 2008). These three constituents exceed the chronic aquatic life NM WQS and/or the selected amphibian TRVs (Harfenist et al. 1989; Schafer and Associates 1999a) at one or more RI surface water locations.

NewFields (2008) concluded that where water is present in the STSIU, copper concentrations are elevated above acute and chronic water quality criteria at most locations. Risks to aquatic life from copper in surface water are predicted for the limited aquatic habitat within the STSIU. However, the risks to aquatic receptors from chemical exposure need to be qualified given the overall physical quality of the aquatic habitat. Without persistent aquatic habitat in the area, aquatic life is limited to invertebrate species that breed relatively rapidly in water and to potentially breeding amphibians and their larval offspring, particularly in the stock tanks. Therefore, as stated by NewFields (2008), the risk estimations presented for aquatic life are highly uncertain.

Remedial Investigation Technical Memorandum

The STSIU RI Surface Water Sampling and Analysis of Rainfall Pools Addendum was completed in 2008 (Chino, 2008). Seventeen surface water samples were collected at surface water drainage and stock tank locations in the STSIU. These samples were used to evaluate occurrence of select metals (aluminium, cadmium, copper, iron, lead, and manganese) within different size fractions based on filter pore size and to assess potential associations of metals with dissolved organic matter.

During the RI Addendum sampling, all of the analysed metals were detected in surface water samples, but only aluminium, cadmium, and copper were detected at concentrations that exceeded the chronic aquatic life criteria (Chino, 2008). Aluminium and cadmium were primarily associated with particulate form and were mostly excluded by filtration with 0.45 micron filter pore size. Concentrations of copper generally decreased with decreasing filter size fraction. However, ultra-filtered (~0.001 micron effective pore size) copper concentrations exceeded aquatic life criteria for about one half of the locations. Copper concentrations were positively correlated with dissolved organic carbon (DOC) concentrations, suggesting that copper may be bound with DOC and thus may have a lower toxicity. Based on these results, a more formalized surface water toxicity study was undertaken, as described in the following section.

Water Effect Ratio Study

As discussed in Section 1.3, Arcadis conducted a copper WER study for the STSIU surface waters in 2011 and results from the WER study were described in the *Development of Site-Specific Copper Criteria Interim Report* submitted to NMED in March 2013 (Arcadis 2013a). A site-specific copper WER model was subsequently developed to derive adjusted copper criteria in STSIU surface waters in the *Revised Site-Specific Copper Toxicity Model Report* submitted to NMED in October 2013 (Arcadis 2013b). The site-specific criteria for STSIU surface waters were adopted by NMED and are contained in NMAC §20.6.4.809.

2010 Wet Season Survey

Before the WER study work plan was developed, a preliminary 2010 Wet Season Survey was conducted to gain a better understanding of water persistence, copper toxicity, and water chemistry variability in the STSIU surface waters (Arcadis, 2013a). A total of 12 STSIU surface water samples were collected in that study (see Figure 4-1). Surface water samples collected were analyzed for a complete set of water chemistry, including parameters such as total and dissolved organic carbon, alkalinity, and total dissolved solids. Previous site investigations included only a limited number of chemical parameters, which precluded estimation of site-specific metal toxicity using predictive models such as the BLM.

Expedited Use-Attainability Analysis

In 2011, ARCADIS conducted an expedited Use Attainability Analysis based on NMED SWQB’s Hydrology Protocol to determine the appropriate hydrologic regime of STSIU surface water drainages. Hydrologic classifications of STSIU drainages were proposed in the *Application of the Hydrology Protocol to STSIU Drainages* report submitted in October 2012 (Arcadis, 2012). The revised hydrologic classifications were accepted by the New Mexico Water Quality Control Commission without comment. The hydrologic classifications of STSIU drainages are depicted in Figure 4-2. Non-ephemeral drainages include Rustler Canyon, Martin Canyon, Bolton

Canyon, and immediately downstream of Ash Springs. All other STSIU drainage areas are designated as ephemeral.

Surface Water Runoff Quality and Duration Sampling

Appendix E documents the collection and analysis of surface water runoff samples proposed in the STSIU FS Proposal (Arcadis 2011a). The objectives of the surface water runoff investigation included providing additional surface water quality data to support refinement of the conceptual site model and to support the STSIU FS. The objectives of the sampling also included defining the duration of flow and presence of water to support classification of drainage channels in the STSIU. However, the data associated with the duration of flow and presence of water was used in the expedited UAA described above and is thus not included in Appendix E.

As described in Appendix E, both dissolved and total concentrations of metals in stormwater samples were typically higher in samples collected from stormwater samplers installed at higher elevations above the creek channel. This may be due to a longer contact time between runoff and COC-containing soil and sediment or may be due to greater entrainment of COC-containing sediments at higher flows. Concentrations of total metals were generally substantially higher than concentrations of dissolved metals. Most samplers contained substantial quantities of sediment entrained within the samplers and the sample bottles at the time of sample retrieval and the presence of these sediments may have resulted in elevated concentrations of total metals in the stormwater samples. These sediments coupled with the uncertainty regarding the amount of time samples were in the sample bottles prior to retrieval introduced uncertainty in the quality of the data. Because of this, the data in Appendix E were evaluated qualitatively to guide the refinement of the conceptual site model.

4.1.2 Other Activities

Rangeland Improvements

Chino and their lessees periodically perform maintenance activities on the rangelands lying within site boundaries, including removing earthen stock tanks that are no longer required either because they are no longer used or because they are redundant due to other stock tanks located nearby. As part of these rangeland improvements, stock tanks 15, 26, 29, and 60 were removed between 2013 and 2022 and were not replaced.

Additionally, the approximately 230-acre drainage basin feeding stock tank 06 is in the process of being improved to provide for stable stormwater conveyance to the tank inlet. The drainage channel upgradient of the tank is being improved for approximately ½ mile, beginning at stock tank 06 and extending northeast to the railroad crossing immediately west of the intersection of North Hurley Road and A Street. In addition, five check dams are being installed along the drainage to slow stormwater flows entering stock tank 06. These improvements will achieve their desired effect and an improvement to water quality is also expected.

4.2 Nature and Extent of Contamination

Using the results presented in the 2008 RI Addendum, six constituents exceeded a surface-water criterion in the STSIU (SRK, 2008b). Aluminum, cadmium, copper, nickel, silver, and zinc all had exceedances of their respective chronic aquatic life NMWQC, and nickel is the only constituent that did not exceed its respective acute aquatic life NMWQC. However, because the exceedances of the acute NMWQC for aluminum, cadmium, silver, and zinc are insignificant when compared to those for copper, and that any measure taken to address copper in STSIU surface water would also address the exceedances of these metals, copper is the constituent of focus for STSIU surface water.

Since acceptance of the RI, HHRA, and ERA in 2008, New Mexico updated their water quality criteria during the 2010 triennial review. This nature-and-extent section is based on the most recent §20.6.4.900I NMAC.

As described in Section 4.2, additional STSIU surface-water studies were completed after the RI Addendum report was accepted. These studies include the Wet Season Survey conducted in 2010, the Criteria Adjustment Study conducted in 2011, and the Expedited UAA Study and Surface Water Runoff Quality and Duration Study conducted in 2011. Metal concentration data collected during the Criteria Adjustment and Wet Season studies are included in this nature-and-extent section. Copper WERs calculated in accordance with NMAC §20.6.4.809 are also considered herein for evaluating the nature and extent of copper contamination. Based on hydrologic classifications shown in Figure 4-2, chronic aquatic life criteria are only considered for the non-ephemeral drainages, whereas acute criteria are considered applicable to the ephemeral drainages.

4.2.1 Copper – Surface Water Drainages

Figure 4-3 presents a summary of copper compliance and areas of potential concern based on the site-specific criteria and the revised hydrologic classifications for STSIU surface waters described in Section 4.1.1. Table 4-4 includes the WERs used to evaluate the nature and extent of copper contamination in the drainages included on Figure 4-3. Ephemeral streams are shown on Figure 4-3 as dashed lines and sections of drainages that are non-ephemeral are shown as solid lines. Recognizing that aquatic habitat in STSIU surface-water drainages consists entirely of isolated and distal pools in bedrock sections of drainage channels (with the exception of Stock Tanks), Figure 4-3 also distinguishes the alluvium-dominated channels as white-dashed drainage lines. This depiction is intended to highlight drainage areas in which significant pool habitats do not occur due to substrate limitations. The green drainage lines (dashed and solid lines) shown in Figure 4-3 represent drainage areas in which copper contamination is not expected to be of concern in drainage pools based on compliance with the NMAC §20.6.4.809 based on the WERs included on Table 4-4.

Two surface water drainage locations in the STSIU exceed the hardness-adjusted acute aquatic life NMWQC for copper, both of which are in the D-3 Drainage. The HQ for both these exceedances were approximately 8.8. The WER-based Acute HQs are < 1 in samples associated with Lucky Bill Canyon, all but one sample in Martin Canyon, all but one sample in Rustler Canyon, three samples in C-1 Drainage, one sample in C-2 Drainage, three samples in D-1 Drainage, two samples in D-2 Drainage, Lampbright Draw and B and G Drainages, between 1 and 2 in samples associated with one sample in Martin Canyon, one sample in A Drainage, one sample in C-1 Drainage (upgradient of Bolton Canyon Confluence), one sample in D-1 Drainage, and one sample in D-2 Drainage, and above 2 in samples associated with one sample in Rustler Canyon, one sample in C-1 Drainage (downgradient of Bolton Canyon Confluence), one sample in C-2 Drainage, and all three samples in D-3 Drainage (Tables 4-5 and 4-6).

4.2.2 Copper – Stock Tanks

Water chemistry has been evaluated for some of the STSIU stock tanks during previous Site investigations, including the STSIU ERA, STSIU RI, and Wet Season Survey, and from select stock tanks in 2021. The STSIU stock tanks consist of concrete or steel tanks that receive water from springs or windmill-pumped groundwater, and earthen tanks that receive the majority of their water from surface runoff. Earthen tanks in STSIU are typically located in surface water drainages and thus collect water from upgradient drainage channels during precipitation events. A few earthen tanks, however, are located outside of drainage channels and receive overland flow directly from adjacent upland areas instead of upgradient drainage channels. Figure 4-4 shows the current and historical locations and type of known STSIU stock tanks and distinguishes individual tanks of potential concern based on the WERs, as described below.

Consistent with the surface water drainage evaluation, NMAC §20.6.4.809 is used herein to evaluate the nature and extent of copper contamination in stock tanks. As indicated in Figure 4-4 and Table 4-7, earthen stock tanks are the major focus of this evaluation because these tanks receive their water from surface runoff, which can potentially be contaminated by upland COC sources (in contrast to steel and concrete tanks that receive groundwater via springs or windmill pumps). Surface water chemistry data are available for 11 earthen stock tanks, which includes the majority of earthen stock tanks located in the general area of potential concern based on proximity to the historic smelter location (i.e., within subwatersheds A through D) (Figure 4-4; Table 4-7). WERs determined in drainage pools are expected to represent conservative estimates of potential WERs for stock tanks because organic carbon, which greatly mitigates copper toxicity, is generally greater in stock tanks than in surface water pools (due to additional organic matter input from livestock use and aquatic vegetation).

Application of NMAC §20.6.4.809 for the stock tanks results in only marginal exceedances of the adjusted copper criteria (i.e., the greatest adjusted acute HQ is 5.86 in the west drainage stock tank; Table 4-7). As shown in Table 4-7, adjusted copper HQs were calculated for each stock tank using the watershed-specific WERs and the STSIU WER. For stock tanks that were sampled multiple times throughout previous investigations, geometric mean adjusted copper HQs were also calculated to provide a more robust estimate of tanks of potential concern. Using the above methodology, stock tanks 6, 15, 26, 29, and 60 were determined to have concentrations of potential concern to aquatic life (Table 4-7). However, stock tanks 15, 26, 29, and 60 were removed between 2013 and 2022 as part of rangeland improvements, as discussed in Section 4.1.2, and are thus not considered further.

4.3 Surface Water Locations to be Evaluated for Remedial Alternatives

Drainages

Surface water locations described above as areas of potential concern to aquatic life uses will be evaluated for remedial alternatives. This includes the yellow drainage areas shown in Figure 4-3. As described above, potential areas of concern may need to be revised based on the ongoing development of copper SSC.

Stock Tanks

Stock tank 6 was determined to have concentrations of potential concern to aquatic life uses and will be evaluated for remedial technologies.

5. Identification and Screening of Potentially Applicable Technologies

5.1 Soil

As part of the FS Proposal, a range of potential soil remedial technologies have been identified and summarized for the upland areas of the STSIU. In 2006, an extensive literature search was conducted consisting of a review of over 500 abstracts related to potential soil remedial technologies for treatment and/or removal of the primary constituent of concern for the site (copper). As a result of this review, 12 technologies have been identified and included in this FS as Table 5-1 for a preliminary screening and evaluation. The preliminary screening and evaluation of the potential soil remedial technologies has been performed to determine which remedial technologies should be retained for consideration as part of the FS alternatives analysis, which will include a comprehensive alternatives evaluation for remedial alternatives for the site. The preliminary screening of each remedial technology is based on USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (USEPA, 1988) and includes an evaluation of the effectiveness, implementability, and cost. Potential use of institutional controls, consistent with CERCLA guidance (EPA 2010) may be warranted for implementation of specific remedial technologies as described below.

Based on the preliminary screening conducted in the FS Proposal only a brief summary of the technology is presented, with a summary of the effectiveness, implementability and cost presented in Table 5-1, if the remedial technology is considered viable, it will be retained for consideration as part of the site-wide remedial alternatives analysis in Section 6.

A brief explanation of these soil remedial technologies described below and a preliminary screening of each technology in presented in Table 5-1.

5.1.1 No Action

This remedial technology consists of leaving the site soils in their current condition without performing any soils/vegetation removal or treatment, engineering controls, or institutional controls as part of the remediation efforts. This technology is provided as a baseline for screening other technologies and is summarized as Technology No. 1 in Table 5-1.

Screening Result

No Action is being retained as a baseline for comparison with other remedial technologies in the FS and for potential use in conjunction with other technologies where implementability may be low.

5.1.2 Monitoring

This remedial technology consists of leaving the site soils in their current condition without performing any soils/vegetation removal or treatment, engineering controls, or institutional controls as part of the remediation efforts. As part of this technology, a monitoring program would be implemented to observe and document the occurrence of natural attenuation of site contaminants. Monitoring would include collection of qualitative and quantitative samples of STSIU media such as surface soils, vegetation and other biotic media. This technology is provided as a baseline for screening other technologies and is summarized as Technology No. 2 in Table 5-1.

Screening Result

Monitoring is being retained as a baseline for comparison with other remedial technologies in the FS and for potential use in conjunction with other technologies where implementability may be low.

5.1.3 Excavation and Reuse

This remedial technology consists of removal of soils with contaminants above the soil pre-FS RAC levels located 0- to 1-inches to 6-inches bgs, depending on the potential receptor. Depth of potential removal could vary depending on site features such as the presence of bedrock. Final lateral and vertical removal extents would be determined during the remedial design. This technology would remove soils considered to be impacted for final onsite management at the waste rock stockpiles or for future use as soil fill material for the Chino Mine tailings pond closure activities or other operational areas of the site. This technology is summarized as Technology No. 3 in Table 5-1.

Screening Result

Soil excavation could be applied at the site for the overall site-wide remedy or applied at targeted locations with higher concentrations of contaminated soils in conjunction with another technology. Although this technology may not be implementable at all areas, this technology is being retained due to its high effectiveness at reducing site contaminants.

5.1.4 Excavation and Disposal

This remedial technology consists of removing soils above the soil RAC levels in the same manner as described in the excavation and onsite management remedial technology described in Section 5.2. However, instead of final onsite management of soils at the waste rock stockpiles or re-using the removed soils for fill material in the operational areas of the site, the soils would be disposed of at an offsite commercial disposal facility.

Removed soils would be characterized in accordance with RCRA regulations to determine final offsite transportation and disposition requirements. This technology is summarized as Technology No. 3a in Table 5-1.

Screening Result

Soil excavation could be applied at the Site for the overall site-wide remedy or applied at targeted locations with higher concentrations of contaminated soils in conjunction with another technology. This technology would only be implemented on a limited or case-by-case basis, in select areas. Therefore, this technology is not being retained for development of remedial alternatives due to the high costs compared to excavation and re-use.

5.1.5 Soil Amendments – Limestone and/or Organic Matter

Many soil amendment technologies exist for reducing metals bioavailability, toxicity, and mobility in soils. They rely on changing soil chemistry to affect the solubility or mobility of site contaminants within the soil column, and/or improve vegetative cover or speciation. Several soil amendments are described further below including, pH adjustment via lime addition and/or organic matter, tilling (Section 5.1.6), ferrihydrite (Section 5.1.7) and chelating agents (Section 5.1.8). The pH adjustment and/or organic matter addition technology is summarized as Technology No. 4a in Table 5-1. Arcadis (2017) indicates that liming is recommended for soils with pH < 2 but liming is not that helpful above that pH, and soils pH identified herein are not less than pH 2. Organic matter was not recommended after the amendment study was completed because cow manure brought in weedy plants that degraded the habitat (however, other forms of organic matter could be considered).

As included in the Amendment Study Work Plan (Arcadis, 2008a), data collected over the five years of monitoring will be assessed to determine if a particular amendment, or combination thereof, can be successfully applied to particular areas at the Site.

Screening Result

Soil amendment using lime or organic matter will be retained as a remedial technology to be considered as part of the comprehensive remedial alternative for further evaluation in the FS.

5.1.6 Soil Amendments – Tilling

Soil mixing by using mechanical tilling technology is being evaluated as part of this FS for use at the site as part of the comprehensive remedial alternative. This technology does not include the addition of other amendments such as lime and/or organic matter; however, the subsurface soil at STSIU may include Gila Conglomerate Formation which has high alkalinity and geochemistry that may serve as a naturally-occurring amendment. Tilling will be conducted in a similar manner as performed in the soil amendment study. Initially, the ground surface vegetation is cleared and grubbed using a bulldozer and/or excavator. Following vegetation clearing, the tilling is conducted using a 140 blade (or similar) attached to a bulldozer to mix to a pre-determined depth of soil. In areas requiring soil mixing with limited access to larger equipment, hand tilling equipment can be used as an alternative to the bulldozer to mix soils. Tilling is less intrusive in general; it lowers disruption to habitat and lowers carbon footprint compared to alternatives relying on excavation.

Tilling has the potential to provide additional attenuation of metals and to raise pH conditions to more neutral pH conditions pending existing pH levels within the soil treatment area being tilled. Plant coverage, pH, and soil chemistry would be monitored post-tilling operations. As part of the remedial design phase, additional soil sampling (contaminant levels and soil chemistry) within the soil treatment column would be conducted to determine if tilling alone would be appropriate technology and what is the appropriate soil mixing depth within each soil treatment area to raise pH conditions. The soil amendments - tilling technology is summarized as Technology No. 4b in Table 5-1.

Screening Result

Tilling is being retained for comparison with other remedial technologies in the FS and for potential use in conjunction with other technologies where implementability may be low. Tilling could potentially be applied at the majority of the site areas containing sufficient equipment access and appropriate terrain slopes or at targeted locations where it is determined that lime and organic matter soil amendments are not warranted.

5.1.7 Soil Amendments – Ferrihydrite

The use of the soil amendment ferrihydrite as a potential soil remedial technology is being evaluated for use at STSIU as part of a comprehensive remedial alternative. The addition of ferrihydrite to soils containing copper has been observed to bind copper, reduce free Cu^{2+} activity, and total soluble and labile concentrations of copper. The soil amendments - ferrihydrite technology is summarized as Technology No. 4c in Table 5-1.

Screening Result

A site-specific data gap for this particular technology currently exists. And if this technology were to be considered a pilot and/or bench-scale treatability study would be proposed. However, pilot and/or bench scale treatability studies are not being proposed to be conducted at this time. This technology is not being retained for remedial alternatives evaluation in Section 6.

5.1.8 Soil Amendments – Chelating Agents

The application of chelating agents as a potential soil remedial technology is being evaluated for use at STSIU as part of a comprehensive remedial alternative. Specifically, chelating agents are being evaluated for use in the following soil remedial technologies:

- Phytoextraction;
- Soil Washing (Ex-Situ); and
- Soil Washing (In-Situ).

Chelating agents are compounds that are added to the soil to either assist in increasing the uptake of the contaminant (i.e., copper) into plants for the phytoextraction process or for removing a metal from soils as part of a soil washing technique. The use of chelating agents in the phytoextraction and soil washing processes are discussed in detail below and are summarized as Technologies Nos. 4d1, 4d2, and 4d3 in Table 5-1.

5.1.8.1 Soil Washing (Ex-Situ)

Ex-situ soil washing is a soil remedial technique consisting of removing and concentrating contaminants from bulk soil using separation methodologies. Soil washing can be applied to soils containing heavy metals. The resulting concentrated soil containing the contaminants must be characterized for further treatment and/or offsite disposition. The “clean” portion of the separated soil is also characterized to determine if it meets the criteria for on-site reuse to be returned to the excavations or if it requires further treatment and/or offsite disposition.

The design of the soil washing process, including the size of scrubber unit, type of soil washing detergent, and soil handling requirements, will be determined via a pilot treatability study and during the remedial design.

Screening Result

Although the cost of soil washing may be moderately lower than excavation, the uncertainty of this technology and the access limitations of water and equipment to certain areas of the STSIU does not make it a viable remedial technology. Soil washing is not being retained as a remedial technology for consideration as part of the comprehensive remedial alternative for further evaluation in the FS Report.

5.1.8.2 Soil Washing (In-Situ)

In-situ soil washing consists of introducing a chelating agent into the soil. The chelating agent assists in mobilizing the contaminant within the soil column and allows it to become more soluble in the groundwater. The groundwater, containing the site contaminant, is then extracted with a groundwater extraction system for treatment and/or disposal.

Screening Result

Due to the lack of infrastructure required for the groundwater extraction system, the high costs, and the uncertainty in the effectiveness, in-situ soil washing is not considered a viable remedial technology. In addition, site accessibility issues, including the remoteness of the site and incongruous nature of areas needing treatment, will make soil washing less implementable or potentially infeasible for certain portions of STSIU. Therefore, in-situ soil washing is not being retained as a remedial technology for consideration as part of the comprehensive remedial alternative for further evaluation in the FS Report.

5.1.8.3 Phytoextraction

Phytoextraction is the process of plants taking up contaminants (i.e., copper) located in the soils via the plant root system. Once the metals have been transferred through the root system, the contaminants are subsequently transferred and accumulated into the aboveground portions of the plant tissue. Once the phytoaccumulation (contaminants transferred to the above ground plant tissue) has occurred, the contaminants are removed from the site by harvesting the plants. An additional phytoextraction technology consists of the contaminant accumulation occurring just in the root system, resulting in the need to harvest the entire plant (including the roots) to remove the contaminants from the site. The plant species selected for phytoextraction must be able to tolerate the site contamination (i.e., copper), must be fast growing, have a high biomass, and easily be harvested.

Screening Result

Although phytoextraction costs significantly less during the initial phase of treatment and is less invasive as compared to other soil remedial technologies, the uncertainty of this technology being effective in the natural environment, the potential of SGFBs consuming impacted vegetation and seeds, and the significantly increased treatment duration, does not make it a viable option. Phytoextraction is not being retained as a remedial technology for consideration as part of the comprehensive remedial alternative for further evaluation in the FS Report.

5.1.9 Containment – Soil Cover

The use of a soil cover is being considered as a potential remedial technology at the site to contain the impacted soils and prevent exposure of site contaminants to potential site receptors. As part of this remedial technology, a soil cover would be placed over existing soils with site contaminant levels above the Pre-FS RAC values. In addition, areas of the site that currently consist of soils intermixed with exposed bedrock but have been determined to historically contain fully established soil and vegetative covers will be considered for a soil cover.

The purpose of the soil cover is to place imported, approved soils upon impacted soils or exposed bedrock areas to provide a layer of clean soil that would provide protection of SGFBs and would promote growth of local, naturally occurring vegetation. Clean, approved soil cover material would be spread, graded, and compacted to promote positive drainage. The minimum thickness and type of soil, including percentage of organic matter, to be used for the soil cover would be selected during the remedial design. The containment – soil cover technology is summarized as Technology No. 5a in Table 5-1.

Screening Result

Installation of a soil cover is considered to be a viable, cost-effective, and easily implementable remedial technology and will be retained as a remedial technology to be considered a part of the comprehensive remedial alternative for further evaluation in the FS Report.

5.1.10 Containment – Impermeable Cover

This remedial technology consists of placing an impermeable cover over targeted areas with soil contaminant levels above the pre-FS RAC. This technology would include preparing the ground surface and site grades to accommodate the installation of the impermeable cover layer. Ground surface preparation activities would include clearing and grubbing existing vegetation and smoothing and compaction of the ground surface using general construction equipment such as excavators, graders, and rollers. Once proper ground surface conditions have been met (i.e., site grade and subgrade compaction), the impermeable cover would be installed. Details of the impermeable cover, including subgrade preparation requirements, subbase layers, and final impermeable cover material and thickness would be determined during the remedial design. The containment – impermeable cover technology is summarized as Technology No. 5b in Table 5-1.

Screening Result

Because it is not practical to implement this technology on a large scale and due to the impacts of surface water infiltration and stormwater run-off, and limitations on future vegetated growth and grazing, an impermeable cover is not considered a viable remedial technology to be retained for further evaluation in the FS Report.

5.1.11 Surface Soil Controls – Phytostabilization

The purpose of surface soil controls is to further stabilize the surface soils to prevent or greatly reduce airborne dispersion of soils and provide overall erosion control for storm water. Phytostabilization is considered a remedial technology that would provide increased surface soil controls. Phytostabilization consists of vegetating the ground surface with plant species that are targeted at increasing long term soil stabilization as compared to existing vegetative conditions and/or other revegetation options that are not focused specifically on soil stabilization. The seed and plant species, planting locations and density, thinning requirements, and OMM activities would be determined during the remedial design. The surface soil controls - phytostabilization technology is summarized as Technology No. 6 in Table 5-1.

Screening Result

Phytostabilization is not considered a standalone remedial technology that is effective at reducing site contaminants in the soils; therefore, this remedial technology will not be retained for evaluation in Section 6.

5.1.12 Phytoremediation

Phytoremediation consists of planting vegetation (trees and/or plants) that can uptake the contaminants located in the soil and subsequently remediate the soils. Trees and/or plants remove the site contaminants when the roots take in water and nutrients from the surrounding impacted soils. Metals are stored in the roots, stems, or leaves of the vegetation, effectively removing them from the soil. Activities that are associated with the implementation of phytoremediation include selection of the proper tree and plant species, site preparation (potentially clearing and grubbing existing vegetation), planting, and OMM to ensure that the trees and plants are being established. The phytoremediation technology is summarized as Technology No. 7 in Table 5-1.

Screening Result

Due to the extended time period it would initially take to reduce site contaminants from the soils and the fact that the site remedy effectiveness is directly dependent on the success of the trees and plants, phytoremediation is not being retained for further evaluation in the FS Report.

5.1.13 Electrokinetic Remediation

Electrokinetic remediation is being evaluated as part of this FS for use at the site as part of the comprehensive remedial alternative. Electrokinetics is based on the principle that when direct current (DC) is passed through contaminated soil, certain (negatively charged) types of contaminants will migrate through the soil pore water to a place where they can be removed. This alternative uses electrode assemblies that are installed in the ground in a square array and connected to a DC voltage power supply. When the DC power supply is activated, a current passes through the soil. As the electric current is applied to the soil between the electrodes, water flows by electroosmosis in the soil pores usually toward the cathode. When the contaminated water reaches the cathode, it is pumped to the surface by circulating water within the ceramic casing.

Electrokinetic remediation has the potential to provide remediation of copper contamination without physically removing any soil. The lack of physical soil removal allows for remediation without impacting the surface vegetation at the cost of increasing acidity in the surface soil. This increase in acidity would compound the already low overall pH in Chino soils east of the historic smelter. The electrokinetic technology is summarized as Technology No. 8 in Table 5-1.

Screening Result

It is assumed that it is not practical to implement this remedial technology over large-scale area, and therefore this technology will not be retained for further evaluation in the FS Report. Even on a small scale, the potential decreased soil pH and difficulties implementing this alternative in areas with low soil moisture are considered significant enough that this alternative will not be retained for evaluation in the FS Report.

5.1.14 Summary and Identification of Data Needs

The following soil remedial technologies were evaluated in the preliminary screen:

- No Action [retained];
- Monitoring [retained];
- Excavation and Reuse [retained];
- Excavation and Disposal [not retained];
- Soil Amendments – Lime and/or Organic Matter [retained];
- Soil Amendments – Tilling [retained];
- Soil Amendments – Chelating Agents [not retained];
- Soil Amendments – Ferrihydrite [not retained];
- Containment – Soil Cover [retained];
- Containment – Impermeable Cover [not retained];
- Surface Soil Controls – Phytostabilization [not retained];
- Phytoremediation [not retained]; and
- Electrokinetic Remediation [not retained].

Besides ongoing sampling activities, there are no additional data needs that need to be considered based on this preliminary screen of remedial alternatives for soil.

5.2 Surface Water

As part of the FS Proposal, a range of potential surface water remedial technologies have been identified and summarized for the drainage areas and stock tank associated with the Site. A preliminary screening and evaluation of the potential surface water remedial technologies has been performed to determine which remedial technologies should be retained for consideration as part of the FS, which will include a comprehensive alternatives evaluation for the site. The preliminary screening of each remedial technology is based on USEPA (1988) and includes an evaluation of the effectiveness, implementability, and cost.

Based on the preliminary screening, if the remedial technology is considered viable, it will be retained for consideration as part of the site-wide remedial alternatives analysis. As a result of this review, seven technologies were identified and are described in detail below and a preliminary screening of each technology in presented in Table 5-2.

5.2.1 No Action

This remedial technology consists of leaving the drainage areas which are known to contain surface water with levels of site contaminants above surface water Pre-FS RAC values, in their current condition without performing any soil, sediment, vegetation, groundwater and/or surface water removal or treatment. This technology is being retained to serve as a baseline control to compare to other potential surface water remedial technologies. This technology is summarized as Technology No. 1 in Table 5-2.

Screening Result

No Action is being retained as a baseline control for comparison with other remedial technologies in the FS and for potential use in conjunction with other technologies where implementability may be low.

5.2.2 Monitoring

This remedial technology consists of leaving the drainage areas which are known to contain surface water with levels of site contaminants above surface water Pre-FS RAC values, in their current condition without performing any soil, sediment, vegetation, groundwater and/or surface water removal or treatment. As part of this technology, a monitoring program would be implemented to observe and document the occurrence of natural attenuation of site contaminants. Monitoring would include collection of qualitative and quantitative samples of site media such as surface water, in-drainage sediments, and/or vegetation. This technology is being retained to serve as a baseline control to compare to other potential surface water remedial technologies. This technology is summarized as Technology No. 2 in Table 5-2.

Screening Result

Monitoring is being retained as a baseline control for comparison with other remedial technologies in the FS and for potential use in conjunction with other technologies where implementability may be low.

5.2.3 Excavation

This remedial technology consists of the removal of soils and/or sediments from the specified drainage areas. Based on the work conducted as part of the FS work plan, historical sediments and soils within the drainages may be contributing to surface water quality issues. Although a specific loading rate has not been determined for historical sediments for each drainage, sediments have been identified as a potential source to surface water. Therefore, excavation will be considered a viable remedial technology to consider for the comprehensive remedial alternative. This technology is summarized as Technology No. 3 in Table 5-2.

Screening Results

Excavation of sediments is an effective and technically implementable way of removing contaminated sediments from surface water although the costs associated with the excavation of sediments are considered to be high.

Therefore, excavation of sediments is being retained for further evaluation as part of a comprehensive remedial alternative in the FS.

5.2.4 In-Stream Removal of Suspended Sediments

This remedial technology consists of in-stream removal of suspended sediments via construction of settling basins within the stream drainage area pathway. The contaminants are adhered to the suspended sediments located within the surface water, subsequently contributing to the exceedances of the surface water Pre-FS RAC values. Removal of the suspended sediments containing the contaminants will result in lowering the total contaminant concentrations in the surface water. There may still be a potential for dissolution of contaminants from sediments into the dissolved phase.

Multiple settling basins would be constructed at specified locations along the drainage area to capture sediments at different points along the surface water drainage pathway. The location, size, and materials of the settling basins would be determined during the remedial design. The settling basins would be located in areas that are easily accessible by construction equipment for removal of the accumulated sediments. The frequency of sediment removal from the settling pools will depend on the rate of sediment accumulation and would be determined during the remedial design. This technology is summarized as Technology No. 4 in Table 5-2.

Screening Results

In-stream removal of sediments seems to be an effective, technically implementable, and cost-effective way of removing contaminated sediments from surface water. Therefore, in-stream removal of sediments is being retained for further evaluation as part of a comprehensive remedial alternative in the FS.

5.2.5 Limestone Treatment

This ex-situ remedial technology consists of the installation of limestone features within the surface water drainage area to passively treat surface water with contaminant levels above the Pre-FS RAC levels. Contaminants which either adhere to the suspended sediments in surface water or are within the dissolved phase contribute to lowering the pH of the water which creates a more acidic environment when compared to naturally occurring surface water in the region that do not contain the contaminants.

Limestone features would require installation at multiple locations along the surface water drainage areas. The multiple locations of the limestone features would provide increased treatment of the surface water as it progresses down the drainage area. The limestone features installation may consist of the construction of a waterfall using limestone masses to increase surface water contact of the water with the limestone. In addition, limestone may be installed as armoring and/or chips. The final design and location of the limestone features would be determined during the remedial design. This technology is summarized as Technology No. 5 in Table 5-2.

Screening Results

Limestone treatment is an effective and technically implementable way of removing contaminated sediments from the surface water. Therefore, installation of limestone features is being retained for further evaluation as part of a comprehensive remedial alternative in the FS.

5.2.6 In-Situ Treatment

This in-situ remedial technology consists of the insertion of an alkaline fluid into the active channel and bar sediments in the drainages of the STSIU to treat surface water with contaminant levels above the Pre-FS RAC levels.

In-situ treatment would need to be evaluated using a pilot study to determine the effectiveness of this technology on the STSIU sediments. This technology would only be an effective remedial technology if the majority of metals loading for the STSIU drainages are related to constituents in legacy sediments. If in-situ treatment is determined to be an effective remedial technology, however, this technology would require extensive infrastructure installation along the drainages for transport and treatment of an alkaline fluid. The final design and location of this infrastructure would be determined during the remedial design. This technology is summarized as Technology No. 6 in Table 5-2.

Screening Results

In-situ treatment may be effective and technically implementable way of neutralizing contaminated sediments prior to leaching to surface water, but due to the low implementability and high cost, this technology is not being retained for further evaluation as part of a comprehensive remedial alternative in the FS.

5.2.7 Sediment and Erosion Control

Based on the surface water quality data, presented in Section 4, stormwater run-off originating from the upland areas of the site is a contributing factor to surface water impacts within the drainage areas, a comprehensive sediment and erosion control system could be constructed to minimize impacts from entering the drainage areas. The sediment and erosion control system would be considered a permanent remedial technology that would reduce contaminants from entering the surface water located within the drainage area systems.

The sediment and erosion control system would consist of adjusting surrounding grade elevations where necessary and installing various types of BMPs to redirect upland run-off away from the surface water drainage areas and allow it to infiltrate directly into the upland soils. Grading adjustments may include, but may not be limited to, construction of swales, drainage ditches, and/or catch ponds to capture stormwater run-off for infiltration and/or redirect stormwater run-off from entering the drainage areas.

Temporary and permanent BMPs may be utilized as part of the sediment and erosion control system. Temporary BMPs may include silt fences, straw bales, and/or erosion control mats to be installed during construction and be maintained for a limited time after construction until vegetation has sufficiently been established. Permanent BMPs may include placement of gravel, stone, and/or riprap to be placed on newly graded areas, as warranted. The erosion and control system, including grading adjustments and BMP details would be determined during the remedial design. This technology is summarized as Technology No. 7 in Table 5-2.

Screening Results

Construction of sediment and erosion control systems near the drainage areas are considered to be effective, technically implementable, and cost effective. Therefore, installation of sediment and erosion control systems is being retained for further evaluation as part of a comprehensive remedial alternative in the FS.

5.2.8 Summary and Identification of Data Needs

The following surface water remedial technologies were evaluated in the preliminary screen:

- No Action [retained];
- Monitoring [retained];
- Excavation [retained];
- In-stream Removal of Suspended Sediments [retained];

- Limestone Treatment [retained];
- In-situ Treatment [not retained]; and
- Sediment and Erosion Control [retained].

Besides ongoing sampling activities, there are no additional data needs that need to be considered based on this preliminary screen of remedial alternatives for surface water.

A summary of retained remedial technologies is included in Table 5-3.

6. Assembly and Development of Remediation Alternatives

In this Section, remediation technologies retained after screening in Section 5 are assembled into remediation alternatives to identify one or more options that will address the remedial action objectives. A summary of the remediation technologies and alternatives are presented in Tables 6-1 through 6-4. A more detailed description of the technologies is presented in Section 5.

6.1 Soils Alternatives – Total Metals

Five alternatives have been developed to consider for remediation of the soils for total metals within the STSIU. The regulatory standards for human health and ecological risk are different. Human health standards are 5,000 mg/kg of copper and 100,000 mg/kg for iron. Avian risk is based on 95UCL area-weighted average concentration within an exposure unit with concentrations greater than 1,600 mg/kg with concentrations greater than 1,100 mg/kg requiring monitoring. The alternatives are summarized in Table 6-1. A summary of the areas is presented in Figure 6-1.

- Alternative 1: No Action
- Alternative 2: Monitoring
- Alternative 3: Select Excavation and Monitoring
- Alternative 4: Containment – Soil Cover
- Alternative 5: Soil Amendments

6.1.1 Alternative 1: No Action

A no action alternative is included as a baseline comparison to the other remedial alternatives. This alternative would leave the site for upland soil for arsenic, lead and copper in its current state.

6.1.2 Alternative 2: Monitoring

In this alternative monitoring of upland soils would be monitoring for potential natural attenuation of copper concentrations in areas that fail the human health or ecological Pre-FS RAC including 95UCL area-weighted average copper concentrations within exposure units with concentrations greater than 1,100 mg/kg for avian risk.

6.1.3 Alternative 3: Select Excavation and Monitoring

In this alternative, excavation is a technology that can reduce soil copper concentrations greater than 5,000 mg/kg for human health and 1,600 mg/kg for avian risk. Monitoring of 95UCL area-weighted average concentration within an exposure unit with concentrations between 1,100 and 1,600 mg/kg of copper would be conducted for avian risk. NMED (2011) indicates,

> *Chino shall propose risk-based monitoring of abiotic and/or biotic media to help ensure that risk from copper exposure of small ground-feeding birds in the exposure unit do not exceed acceptable levels. A protectiveness assessment consistent with CERCLA guidance will be conducted on a population basis…This monitoring shall include, at a minimum, ground-dwelling invertebrates, an indicator of copper exposure to birds that feed primarily on invertebrates during*

> *critical life stage. This requirement is intended to offset uncertainties in estimated copper exposure between 1,100 and 1,600 mg/kg. Monitoring shall be conducted in intervals no greater than 2 years for the first 5 years to establish a trend within the first 5 year review period. Monitoring frequency beyond the first years will be determined based on the first 5 year review recommendations.*

Monitoring would be completed once NMED issues the ROD. Excavated soil, greater than the RAO, would be excavated and taken to the operational area for subsequent reuse.

6.1.4 Alternative 4: Containment and Monitoring

This alternative is a combination of soil cover long-term maintenance and monitoring. It would be implemented for the same area as Alternative 3, by covering all areas for human health (5,000 mg/kg) and avian risk (1,600 mg/kg). This alternative would include the placement of a clean cover (minimum 6-inches of soil) over the exposure areas and revegetation. Long-term maintenance and monitoring of the cover would be required, and institutional controls would be required.

6.1.5 Alternative 5: Soil Amendments and Monitoring

This alternative is a combination of soil amendments, with potentially tilling implemented for the same areas as Alternative 3 and 4. This alternative would implement soil amendments based on the results of the soil amendment study, with the option for tilling the soil amendments into the 6-inch depth of the surface soils. The soil amendment study is a completed five year study, and the last year of the study was in 2013. Details of the soil amendment design are based on the final results of the soil amendment study.

6.2 Soils Alternatives – Cupric ion activity

Six alternatives have been developed to consider for remediation of the soils for pCu within the STSIU. The areas being considered for remedial alternatives are the areas presented in Figure 3-12 that have pCu concentrations equal to or less than 4.6, where copper concentrations are greater than 327 mg/kg, and also meet the evaluation criteria described in Section 3.2.4. There is some overlap between the areas discussed in Section 6.1 (total metals) and Section 6.2 (pCu) (Figure 6-1). The selection of a remedy for each remedial component may have an impact on the other. This interaction will be described in Section 7. The alternatives are summarized in Table 6-2.

- Alternative 1: No Action
- Alternative 2: Monitoring
- Alternative 3: Excavation and Monitoring
- Alternative 4: Tilling and Monitoring
- Alternative 5: Soil Amendments/Tilling
- Alternative 6: Partial Excavation and Soil Amendments/Tilling

6.2.1 Alternative 1: No Action

A no action alternative is included as a baseline comparison to the other remedial alternatives. This alternative would leave the site for upland soil for pCu in its current state.

6.2.2 Alternative 2: Monitoring

In this alternative, upland soils for pCu would be monitored for potential natural attenuation of copper concentrations in areas that have a pCu less than 4.6, where copper concentrations are greater than 327 mg/kg.

6.2.3 Alternative 3: Excavation and Monitoring

In this alternative, to the extent possible, low pCu areas would be excavated until the pCu of the top six inches of soil meet the criteria of greater than 4.6 or copper drops below 327 mg/kg. Excavated soil, greater than the RAO, would be taken to the operational area for subsequent recycling. Excavation of low pCu soils would be limited because of the infeasibility for completions in areas of bedrock and steep slopes.

6.2.4 Alternative 4: Tilling and Monitoring

In this alternative, to the extent possible, low pCu areas would be tilled using mechanical means. No soil amendments or addition of organic material would be included in this alternative. Tilling would not be conducted on areas inaccessible to the mechanical equipment, on bedrock outcrops. Monitoring of the areas would be conducted to determine if the pCu values are stable over time.

6.2.5 Alternative 5: Soil Amendments, Tilling, and Monitoring

Based on the results of the soil amendment study plots, a recipe for soil amendments (e.g. lime but not organic material) would be added to areas where pCu is less than 4.6. This alternative is Alternative 4 with the addition of amendments in areas where soils cannot be tilled (e.g., too shallow or steep slopes). This alternative may be appropriate as it provides additionally for amendments in areas where tilling is not feasible. However, some areas may still be inaccessible, even on foot, for application of amendments.

6.2.6 Alternative 5: Partial Excavation, Soil Amendments, Tilling, and Monitoring

This alternative is a combination of Alternative 3, 4 and 5 and targets the use of each of the alternatives to the areas that are most suitable for their use. Excavation of low pCu values would be targeted in easy to reach, flatter areas that lend themselves more easily to use of heavy equipment. Excavation would be targeted to the areas around the former smelter location and immediately to the east. Soil amendments and/or tilling would target areas that have either bedrock outcrops in them or are located further away from the former smelter.

6.3 Surface Water Alternatives – Drainages

Five alternatives have been developed to consider for remediation of the surface water drainages within the STSIU. The drainages being evaluated for remedial alternatives are the yellow drainages on Figure 6-1 that have water quality concentrations higher than water quality standards and have the potential for exposure to a receptor. Alternatives to address both drainage surface water run-off and drainage sediments. A more detailed description of the technologies is described in section 5. The alternatives are summarized in Table 6-3.

- Alternative 1: No Action
- Alternative 2: Monitoring
- Alternative 3: Select Excavation and Monitoring

- Alternative 4 Select Excavation, Sediment Control, Limestone Treatment, and Monitoring
- Alternative 5: Sediment Control, Erosion Control, and Monitoring

6.3.1 Alternative 1: No Action

A no action alternative is included as a baseline comparison to the other remedial alternatives. This alternative would leave the site the way it is for surface water drainages.

6.3.2 Alternative 2: Monitoring

In this alternative surface water drainages would be monitored for natural attenuation for copper against surface water quality parameters.

6.3.3 Alternative 3: Excavation and Monitoring

This alternative would excavate deposited historical sediments from potential aquatic habit pools, and upstream of the pools to the extent that the drainages are accessible, in selected or targeted areas along each of the yellow drainages identified in Figure 6-1 (i.e., hot spot removals or receptor locations). Excavation would be conducted only in the drainages and would not extend to the upland soils, as upland soils are addressed in the remedies discussed previously. Long-term monitoring of the surface water quality would be conducted in each of the drainages to document that the surface water quality is improving. This alternative would address historical sediments within the surface water drainages but would have limited impact on new sediments generated from upland soils.

6.3.4 Alternative 4: Excavation, Sediment Control, Limestone Treatment, and Monitoring

In this alternative sedimentation basins would be constructed within the yellow surface water drainages, as shown on Figure 6-1. The sedimentation basins would be constructed of limestone rock and slabs to increase the pH of surface water; thereby decreasing the bioavailability of copper in surface water. Construction of the sedimentation basins within existing areas of lower velocity would also provide an opportunity to excavate existing sediments within the surface water drainages and replace the material with limestone, thereby reducing total copper concentration of in-channel sediments. This alternative would address both the transportation of total copper, as well as dissolved copper concentrations. Long-term monitoring of the surface water quality would be conducted in each of the drainages to document that surface water quality is improving.

6.3.5 Alternative 5: Sediment Control, Erosion Control, and Monitoring

In this alternative BMPs and slope changes would be made to prevent the movement of suspended sediments from entering surface water drainages. This alternative would be most appropriate for areas where upland treatments or removals are not conducted. BMPs would be installed along select locations along the length of the yellow surface water drainages in Figure 6-1. Targeted stream length would be in areas with the highest potential for sediment loading. This alternative would address suspended sediment contribution to total copper concentrations and potential loading of sediments to the surface water drainages. This alternative would require long-term monitoring of surface water quality to determine if it is improving as well as monitoring and maintenance of the constructed/ installed BMPs. Preference should be given to BMPs or controls that include a limestone component which may address the dissolved phase of metals in storm water.

6.4 Surface Water Alternatives – Stock Tanks

Five alternatives have been developed to consider for remediation of the surface-water fed, earthen stock tank 6 within the STSIU. The remedial alternative for the stock tank is linked to the remedial alternatives selected for surface water drainages, discussed in Section 6.3. The alternatives are summarized in Table 6-4.

- Alternative 1: No Action
- Alternative 2: Monitoring
- Alternative 3: Excavation and Monitoring
- Alternative 4: Excavation, Limestone and Monitoring

6.4.1 Alternative 1: No Action

A no action alternative is included as a baseline comparison to the other remedial alternatives. This alternative would leave the site for surface water drainages.

6.4.2 Alternative 2: Monitoring

In this alternative monitoring of the surface water stock tank would be conducted for surface water quality parameters and potential natural attenuation.

6.4.3 Alternative 3: Excavation and Monitoring

In this alternative the stock tank would be excavated to remove the historical sediment from the bottom of the tank. Excavated soil would be excavated and taken to the operation area for subsequent reuse. Monitoring of the stock tank would be required to document that the water quality in the stock tank meets regulatory standards.

6.4.4 Alternative 4: Excavation, Limestone, and Monitoring

In this alternative the stock tank would be excavated to remove the historical sediment from the bottom of the tank. Limestone riprap or blocks would be placed at the bottom of the stock tank to address the bioavailability of potential historical sediments and potential new sediments entering the stock tank that may not have been captured in the remedial alternatives for the surface water drainages. Concentrations of Cu in stock tank sediment are not known to be bioavailable or source to surface water and there is no Pre-FS RAC. Excavated sediment would be excavated and taken to the operation area for subsequent recycling. Monitoring of the stock tank would be required to document that the water quality in the stock tanks meets regulatory standards.

7. Analysis of Alternatives

The remediation alternatives developed in Section 6 are evaluated in this Section. A final remediation alternative is recommended for each remedial component (soils – total metals, soils – pCu, surface water drainages and a surface water stock tank).

The descriptions provided below include the major activities for each remedy at sufficient level of detail for the purposes of this FS. Detailed designs, sampling and analysis plans, inspection and monitoring plans, and other documents necessary for implementing the alternatives will be prepared at a later date after the remedy has been selected and documented in the ROD. Remedial alternative analysis based on the full list of EPA evaluation criteria, including:

- overall protection of human health and the environment;
- compliance with ARARs;
- long-term effectiveness and permanence;
- reduction of toxicity, mobility, or volume;
- short-term effectiveness;
- implementability;
- cost-effectiveness;
- NMED acceptance; and
- community acceptance.

In addition to the above standard EPA evaluation criteria, the remedial alternatives will be evaluated using green remediation criteria. Factors for each remedial alternative that will be evaluated will also be evaluated as a green alternative, which may include, but may not be limited to, conservation of natural resources, carbon footprint, greenhouse gas emissions, and sustainability of the design.

The first two criteria are considered threshold criteria. Threshold criteria are minimum requirements that much we satisfied by an alternative. These criteria are applied to individual alternatives, but not used in the comparative evaluation of alternatives. The next five are the balancing criteria. Comparative evaluation is based on the balancing criteria used to assess tradeoffs between each alternative.

The remaining two criteria, state and community acceptance are modifying criteria and are more difficult to assess at the FS stage. Typically, after the FS is finalized an alternative is selected as the proposed remedial action. The proposed remedial action is described along with the basis for its selection in the Proposed Plan. The evaluation of the modifying criteria is based on the state and public comments on the FS and the Proposed Plan. State and community concerns, and any resulting changes in the selected remedial actions, are documented in the ROD for the site. Therefore, the two modifying criteria are not evaluated in this document.

Each of the remedial alternatives have been summarized in Table 7-1 through 7-4 for: soils – total metals, soils – pCu, surface water drainages, and surface water stock tanks. A summary of the areas, length and stock tanks is presented below. Although evaluated separately in Section 6.1 and 6.2 and presented in Section 7.2 and 7.3, the selection of a remedial alternative for the upland soils will focus on the 113 acres of flat-rocky soils presented in

Figure 3-14 and the selection of a remedial alternative for surface water will focus on the C and D3 Drainages in addition to stock tank 06.

7.1 Evaluation Criteria

7.1.1 Threshold Criteria

Under CERCLA, remediation alternatives must meet the following two threshold requirements:

- overall protection of human health and the environment;
- compliance with ARARs;

7.1.1.1 Protection of Human Health and Environment

This criterion addresses the degree to which the alternative is protective of human health and the environment, considering both long-term and short-term risks. Overall protectiveness is a threshold criterion, in those alternatives that does not achieve adequate protection of human health or the environment are eliminated from further consideration. The ability of the alternatives to achieve remedial action objectives is part of the evaluation of this criterion. This criterion considers the evaluation of other criterion, especially long-term effectiveness and permanence; reduction of toxicity, mobility and volume; and short-term effectiveness. This is a summary of the overall evaluation of these other criterion. Because of the overall, it is evaluated for screening individual alternatives, but not used in comparative evaluation of the alternatives.

7.1.1.2 Compliance with ARARs

This criterion addresses whether or not the alternative meets ARARs, which were defined in Section 2. As with overall protectiveness, compliance with ARA is a threshold criterion that much be met for an alternative to be selected.

7.1.2 Balancing Criteria

7.1.2.1 Long-term Effectiveness and Permanence

This criterion addresses the results of remedial actions in terms of the risk remaining at the site after the response action objectives have been met and the reliability of the remedial action at reducing risks over an extended period of time. The primary focus of this evaluation is the extent and effectiveness of the control that may be required to manage the risks posed by the contaminants in the long-term.

7.1.2.2 Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion addresses the degree to which a remediation alternative reduces the toxicity of contaminants, the ability of the contaminants to migrate into the accessible environment, or the volume/quantity of the contaminated material. This criterion focuses the analysis of the preference for treatment under CERCLA. Effectiveness and reliability of treatment are addressed under long-term effectiveness and permanence, and are not addressed under this criterion.

7.1.2.3 Short-term Effectiveness

This criterion addresses short-term effects on human health and the environment while the alternative is being implemented. The following factors should be addressed as appropriate for each alternative: protection of community and workers during construction, environmental impacts, amount of time to implement the remedial actions.

7.1.2.4 Implementability

This criterion addresses the degree of difficulty in implementing each alternative. Implementability can be divided into three categories: technical feasibility, administrative feasibility, and availability of services and materials. Implementability is a key criterion for more complex alternatives and reliance on innovative technology increases. Implementability issues are important because they address the potential for schedule delays, costs increases, and remedy failure to achieve the intended results. The evaluation considers the following:

- *Technical Feasibility.* Addresses site-specific factors that could prevent successful implementation of an alternative. As previously mentioned in Section 5 implementability issues could include physical interferences, such as bedrock, steep slopes or limited access.
- *Administrative Feasibility.* The degree of difficulty anticipated due to regulatory constraints such as permit approvals and degree of coordination between regulatory agencies and stakeholders.
- *Availability of Services and Materials*. The availability of labor, equipment and materials to implement the alternatives.

7.1.2.5 Cost

The criterion is used to consider the costs of implementing each alternative including capital costs and operating, monitoring, and maintenance costs. Costs that are excessive compared to the overall effectiveness may be considered as one of several factors used to eliminate an alternative. Alternatives providing effectiveness and implementability similar to that of another alternative, but at a higher cost, may be eliminated.

7.1.3 State and Community Acceptance

The last two evaluation criteria are not evaluated in the STSIU FS. These criteria will be addressed in the ROD.

7.1.4 Green Remediation

Factors for each remedial alternative that will be evaluated will also be evaluated as a green alternative, which may include, but may not be limited to, conservation of natural resources (fuel), carbon footprint, greenhouse gas emissions, and sustainability of the design.

7.2 Evaluation of Soils Alternatives – Total Metals

As presented in Section 3, all sample-specific concentrations were less than the 5,000 mg/kg Cu and 100,000 mg/kg Fe Pre-FS RAC for human health unless removal could not be accomplished due to bedrock, infrastructure or steep slope. All habitat alliance polygons had a 95 UCL area-weighted average Cu concentration less than 1,600 mg/kg for avian. Three polygons had 95UCL area-weighted average Cu concentrations between 1,100 and 1,600 mg/kg (1-3, 10-16 and 88-15). It is therefore appropriate to evaluate remedial alternatives for these acres.

The alternatives are summarized as:

- Alternative 1: No Action
- Alternative 2: Monitoring

- Alternative 3: Excavation and Monitoring
- Alternative 4: Containment and Monitoring
- Alternative 5: Soil Amendments and Monitoring

Only Alternatives 1 and 2 are evaluated because there are 140 acres identified with 95UCL area-weighted average concentrations between 1,100 - 1,600 mg/kg. For these acres, Alternative 1 does not meet the threshold criteria because the acres do not meet the Pre-FS RAC for monitoring pCu and, therefore, do not meet the state's criteria. Alternative 2 is monitoring and this remedial alternative meets the state's Pre-FS RAC. Alternative 2 is also considered the greenest remediation alternative behind Alternative 1. Based on the amendment, pH and insect studies, the white rain in 2008 reduced copper uptake into plants and thus reduced phytotoxicity, and improved plant richness. However, NMED (2011) indicates that:

> *If the 95UCL area-weighted average copper concentration in an exposure unit exceeds 1,100 mg/kg, Chino shall propose risk-based monitoring of abiotic and/or biotic media to help ensure that risk from copper exposure of small ground-feeding birds in the exposure unit do not exceed acceptable levels. A protectiveness assessment consistent with CERCLA guidance will be conducted on a population basis. This requirement is intended to offset the uncertainty in risk conclusions for this area due to the paucity of soil and invertebrate data available to characterize risk since the cessation of smelter operations and the 'white rain' event of January 2008. This monitoring shall include, at a minimum, ground-dwelling invertebrates, an indicator of copper exposure to birds that feed primarily on invertebrates during critical life stage. This requirement is intended to offset uncertainties in estimated copper exposure between 1,100 and 1,600 mg/kg. Monitoring shall be conducted in intervals no greater than 2 years for the first 5 years to establish a trend within the first 5 year review period. Monitoring frequency beyond the first years will be determined based on the first 5 year review recommendations.*

A monitoring work plan will be submitted as part of the basis of design after the ROD is issued. Total estimated cost is $1.3MM.

7.3 Evaluation of Soils Alternatives – pCu

As described in Section 3, nearly 4,000 acres of upland have been remediated or reclaimed including interim actions and soil removals under reclamation. For all remaining acres, all soil types had mean pCu concentrations less than their respective PEL except the rocky flat soil type. The acres associated with retained rangeland polygons in flat rocky soils with average pCu ≤ 4.6, which is the flat rocky PEL, totalled 113 (Figure 3-12). These acres were evaluated across the six remedial alternatives for the threshold and balancing criteria.

As discussed in Section 6, the remedial alternatives are:

- Alternative 1: No Action
- Alternative 2: Monitoring
- Alternative 3: Excavation and Monitoring
- Alternative 4: Tilling and Monitoring
- Alternative 5: Soil Amendments, Tilling, and Monitoring
- Alternative 6: Partial Excavation, Soil Amendments, Tilling, and Monitoring

Although Alternatives 1 and 2 are the greenest of the remediation alternatives considered, they do not meet the threshold criteria because the acres do not meet the Pre-FS RAC for pCu and, therefore, do not meet the state's criteria for reduction of risk to vegetation. The ability of Alternative 2 to satisfy the criteria of "overall protection" is low; however, due to the presence of naturally occurring calcium carbonate, natural attenuation may be occurring at the site. The rate of natural attenuation is currently unknown but was enhanced by the 2008 white rain. The long-term effectiveness of this remedial alternative is dependent on natural attenuation in the future; however, a natural attenuation factor for the remediation of pCu has not be determined at this point. Based on the amendment, pH and insect studies, the white rain in 2008 decreased cupric ion activity (increased pCu), reduced copper uptake into plants and thus reduced phytotoxicity, and improved plant richness. Improvements to pCu soils beyond the improvement in 2008 from the white rain, however, are not anticipated in the short-term to meet RAO. Total estimated cost is $1.7MM.

Alternative 3, which is a moderately green remediation alternative, is removal and monitoring of low pCu soils. This alternative would meet overall protection for ecological receptors; however, excavation physically destroys habitat which must be restored (Redente 2004). The effectiveness of this remedial alternative in the long-term is high to increase pCu values. Once excavation of historically deposited soils are removed, the source of the material would be removed; however, short term monitoring and sampling may be required to document that the excavation was sufficient. This alternative reduces toxicity, mobility, and volume of the concentration of pCu in surface soil, and this alternative is considered effective in the short-term. The implementability of this alternative is considered moderate compared to other alternatives. Total estimated cost is $5.5MM.

Alternative 4, which is also a moderately green remediation alternative, is tilling and monitoring of low pCu soils. This alternative would meet overall protection for vegetation. The ability of Alternative 4 to satisfy the criteria of "overall protection" is moderate. Natural attenuation rates for pCu have not been calculated, but tilling would increase the rate of natural attenuation compared to monitoring only. The long-term effectiveness of this alternative is considered moderate to increase pCu values. This alternative would increase the amount of volume, by mixing the topsoil layers with underlying soils, and mobility and toxicity may be reduced. Implementability is better than Alternative 3 because less equipment and movement of soil are required. Total estimated cost is $2.6MM which is half the cost of Alternative 3.

Alternative 5 is amendments, tilling, and monitoring of low pCu soils and this alternative would meet overall protection for vegetation. Amendments include lime but not organic matter. The long-term effectiveness of this alternative is considered moderate to high to increase pCu values. While lime (calcium carbonate) has been shown to increase pCu values at the site, Arcadis (2017) indicates that liming is recommended for soils with pH < 2 but liming is not that helpful above that pH, and soils pH identified herein are not less than pH 2. Organic matter was not recommended after the amendment study was completed because cow manure brought in weedy plants that degraded the habitat; however, other forms of organic matter could be considered. This alternative would be considered moderately effective in the short-term as it may take several years for the soil amendments to increase the pCu values. The implementability of soil amendments is considered high compared to the other alternatives; however, additional applications may be required if steep slopes are encountered. This alternative is not considered a green remediation alternative because of the resource and fuel use required for implementation. Total estimated cost is $3.3MM.

Alternative 6 is partial excavation, soil amendments, tilling, and monitoring of low pCu soils and this alternative would meet overall protection for vegetation. The overall protection of this alternative would be high as it is the most comprehensive and employs all the feasible technologies. The long-term effectiveness for this alternative is considered to be high, compared to the other alternatives. It reduces toxicity, mobility, and volume of the concentration of cupric ion activity (increasing pCu) in surface soil from excavated areas. Soil amendment areas with lime in very low pH soils would reduce toxicity and potentially mobility of remaining soils. Tilling would increase the volume of material but would decrease the mobility and toxicity. This alternative would be considered moderately effective in the short-term. The implementability of this alternative is considered the highest amongst all the alternatives for pCu. Because of the resource and fuel use required for implementation, this alternative is considered the least green of those considered. Total estimated cost is $4.3MM which slightly less than Alternative 3.

The recommended remedial alternative is tilling and monitoring of low pCu soils. Alternative 4 uses the natural alkalinity of the Gila Conglomerate to restore low pCu soils with the least amount of intrusiveness, lower disruption to habitat, and lower carbon footprint compared to alternatives relying on excavation. Tilling would increase the rate of natural attenuation compared to monitoring only. Implementability is better than Alternative 3 because less equipment and movement of soil are required. Total estimated cost is $2.6MM, which is a third the cost of Alternative 3.

7.4 Evaluation of Surface Water Alternatives – Surface Water Drainages

As presented in Section 4, four drainages were determined to have concentrations of potential concern to aquatic life uses, include Drainage A, Drainages C1 and C2, and Drainage D3. It is therefore appropriate to evaluate remedial alternatives for these four drainages.

Drainage A

The surface water in Drainage A is ephemeral and it is thus appropriate to use the WER-based Acute HQ when evaluating surface water quality. As included on Table 4-5, surface water results for copper were just above an HQ of 1 in 2010. Further, HQs in samples collected from stock tank 60 have historically been less than 3, HQs in samples collected from stock tanks 15 and 26 have historically been less than 2, HQs in samples collected from stock tanks 16 and 25 have been less than 1 (Table 4-7). Stock tanks 15, 26, and 60 were removed as part of rangeland improvements completed between 2013 and 2022 (see Section 4.1.2), so current data for these tanks are unavailable. However, a water quality sample was collected from stock tank 16 in 2021 and the WER-based Acute HQ for copper was less than 1. As a result of the relatively low HQs historically measured in this drainage, and because the latest sample indicates the copper HQ is less than 1, the monitoring remedy (Alternative 2) included on Table 7-3 is the most appropriate remedy for this drainage. Alternative 2 is also the greenest remediation alternative for Drainage A behind no action.

Drainages C1 and C2

The surface water in Drainages C1 and C2 are ephemeral, and it is thus appropriate to use the WER-based Acute HQ when evaluating surface water quality in these drainages. As included on Table 4-5, surface water results for copper were just above an HQ of 2 in Drainage C2 and just below an HQ of 2 in Drainage C1. Because the copper HQs are around 2 or below in these two drainages, and because more aggressive remedies may involve damaging existing vegetation that is currently thriving in these drainage systems, the monitoring remedy (Alternative 2) included on Table 7-3 is the most appropriate remedy for these drainages. Alternative 2 is also the greenest remediation alternative for Drainages C1 and C2 behind no action.

Drainage D3

The surface water in Drainages D3 is ephemeral and it is thus appropriate to use the WER-based Acute HQ when evaluating surface water quality in this drainage. As described in Section 4, two surface water drainage locations in the STSIU exceed the WER-based Acute HQ for copper in the D-3 Drainage (see Section 4.2.1). The HQs for both these exceedances were approximately 8.8 (Table 4-5). The water quality results in this drainage support one of the active remedies included in Table 7-3. However, Drainage D3 is steep, heavily vegetated, and little access is available to implement an active remedy. A road would need to be constructed to access the upgradient portions of the drainage to implement remedies involving sediment control or excavation, and the steep walls confining the drainage and heavy vegetation make this technically impractical. As a result, the monitoring remedy (Alternative 2) included on Table 7-3 is the most appropriate remedy for this drainage. Alternative 2 is also the greenest remediation alternative for Drainage D3 behind no action.

The total estimated cost for implementing a monitoring remedy for Drainages A, C1, C2, and D3 is $600K.

7.5 Evaluation of Surface Water Alternatives – Stock Tanks

As presented in Section 4, stock tank 06 was determined to have concentrations of potential concern to aquatic life uses and it is thus appropriate to evaluate remedial alternatives for this tank. The WER-adjusted acute HQ for copper has been less than 2.5 since 2006 (Table 4-7). Additionally, the approximately 230-acre drainage basin feeding stock tank 06 is currently being improved to provide for stable stormwater conveyance to the tank inlet (see Section 4.1.2). Because of these improvements, it is expected that water quality will improve in stock tank 06 with time. As a result, the monitoring remedy (Alternative 2) included on Table 7-4 is the most appropriate remedy for this stock tank. Alternative 2 is also the greenest remediation alternative of those considered for stock tank 06 behind no action. Total estimated cost is $140K.

8. References

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Tables

TABLE 2-1
CHEMICAL-SPECIFIC POTENTIALLY APPLICABLE STANDARDS FOR THE S/TSIU

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Regulatory Program/Authority	Citation	Medium of Potential Interest	Notes
Safe Drinking Water Act (SDWA), Federal	40 CFR 141 Subpart F	Groundwater, Surface Water	Establishes primary drinking standards for public water systems.
SDWA, Federal	40 CFR 143, Subpart B	Groundwater, Surface Water	Establishes secondary non-enforceable health goals for public water systems at levels resulting in no known or anticipated adverse health effects.
Clean Air Act, Federal	40 CFR 50	Air	Establishes primary and secondary ambient air quality standards.
Clean Air Act, Federal	40 CFR 60	Air	Establishes (referenced by NMED AQCR 652) performance standards for new sources based on the specific source categories defined in the regulation.
Air Quality Control Act, State	20.2.3 NMAC	Air	Establishes ambient air quality standards.
Air Quality Control Act, State	20.2.78 NMAC	Air	Defines emissions standards for hazardous air pollutants.
New Mexico Water Quality Act	20.6.2.7.VV NMAC	Groundwater, Surface Water	Definition of a toxic pollutant.
New Mexico Water Quality Act	20.6.2.3101 NMAC	Groundwater	Designates groundwater with total dissolved solids<=10,000 mg/L as potential source of drinking water.
New Mexico Water Quality Act	20.6.4 NMAC	Surface Water	Provides water quality standards for human contact of surface waters. Defines water quality standards for livestock watering. This statute includes an anti-degradation policy, general water quality standards, primary contact standards, and wildlife standards.
New Mexico Water Quality Act	20.6.2.3103(A) NMAC	Groundwater	Establish human health standards for groundwater quality.
New Mexico Water Quality Act	20.6.2.3103(B) NMAC	Groundwater	Establishes additional standards for domestic water supplies.
New Mexico Water Quality Act	20.6.2.3103(C) NMAC	Groundwater	Establishes groundwater quality standards for irrigation use.
Resource Conservation and Recovery Act (RCRA), Federal	40 CFR 261.24	Soil	Regulates the determination of hazardous wastes by defining the maximum concentrations of listed contaminants as measured using the Toxicity Characteristic Leaching Procedure (TCLP).
CERCLA	40 CFR 300 Title 1, Section 101, 111	All Media	References the National Oil and Hazardous Substances Contingency Plan. Establishes funding and provisions for cleanup at hazardous waste sites.

TABLE 2-2
ACTION-SPECIFIC POTENTIALLY APPLICABLE STANDARDS FOR THE S/TSIU

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Regulatory Program/Authority	Citation	Medium of Potential Interest	Description
CERCLA	40 CFR 300 Title 1, Section 101, 111	All Media	References the National Oil and Hazardous Substances Contingency Plan. Establishes funding and provisions for cleanup at hazardous waste sites.
SARA	42 USC 9601	All Media	Establishes clean-up standards and response actions, including the ARAR process (i.e. Applicable Standards).
Clean Water Act - National Pollution Discharge Elimination System (NPDES)	40 CFR 122 40 CFR 125	Surface Water	Requires permits for discharging pollutants from any point source into waters, lists hazardous substances and water-quality parameters, and defines the criteria and standards for issuances of permits, determining compliance, and granting variances. Establishes Best Management Practices (BMPs) to prevent releases of toxic constituents to surface waters.
Clean Water Act	40 CFR 230 40 CFR 231 Sec 404	Surface Water	Requires permits for discharging dredged or fill materials into the navigable waters, including wetlands or floodplains. Permits (Sec 404) are issued if the state has authorization, otherwise, Nation Wide Permits (NWPs) can be issued by the US Army, Corps of Engineers. Applies to all stream modifications, including underground and surface mining activities.
Rivers and Harbors Act of 1899	33 CFR 320 33 CFR 330	Surface Water	Regulates disposal/discharge of dredged or fill materials into US waters, including intermittent streams.
RCRA	40 CFR 241	Soil	Specifies performance requirements for land disposal of wastes.
RCRA	40 CFR 261	Soil	Defines criteria for identifying and classifying hazardous wastes.
RCRA	40 CFR 262	Soil	Establishes standards for generators of hazardous wastes, including requirements for waste shipment packaging, labeling, and manifests. Requirements may be applicable if remediation activities are performed at the S/TSIU and waste generated are hazardous.
RCRA	40 CFR 263	Soil	Establishes standards for transporters of hazardous wastes.
RCRA	40 CFR 264	Soil	Establishes standards for owner and operators of facilities for the treatment, storage, and disposal of hazardous wastes.

TABLE 2-2
ACTION-SPECIFIC POTENTIALLY APPLICABLE STANDARDS FOR THE S/TSIU

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Regulatory Program/Authority	Citation	Medium of Potential Interest	Description
RCRA	40 CFR 268	All Media	Establishes treatment standards for hazardous constituents, identifies wastes that are restricted from land disposal and defines the limited circumstances under which they may be land disposed.
Department of Transportation (DOT) Regulations	49 CFR 173, 178, 179	Soil	Establishes requirements for packaging and shipment of hazardous waste.
CERCLA Off-Site Response Policy	OSWER 9634.11	All Media	Defines criteria for qualifying an off-site hazardous waste disposal facility.
Clean Air Act	42 USC Sections 7401 et. seq.	Air	Requires formulation of air quality standards and source performance standards.
New Mexico Hazardous Waste Act (NMHWA) NMED Hazardous Waste Bureau (HWB)	NMSA 1978, Sections 74-4-1 through 74-4-14	Hazardous Waste	Regulates treatment, storage, and disposal of hazardous waste to ensure maintenance to the quality of the state's environment.
NMHWA, NMED HWB	20.4.1.200 NMAC	Hazardous Waste	Defines criteria for identifying and classifying hazardous waste.
NMHWA, NMED HWB	20.4.1.300 NMAC	Hazardous Waste	Defines standards applicable to generators of hazardous wastes for packaging, labeling, and manifesting waste for transport.
NMHWA, NMED HWB	20.4.2.400 NMAC	Hazardous Waste	Defines standards applicable to the transportation of hazardous waste.
NMHWA, NMED HWB	20.4.1.900 NMAC	Hazardous Waste	Identifies hazardous wastes which are restricted from land disposal.
New Mexico Solid Waste Management Regulations	20.9.1 NMAC	Solid Waste	Regulates the permitting, design, location, and operation of solid waste disposal facilities.
New Mexico Water Quality Act (NMWQA)	NMSA 1978, Sections 74-6-1 through 74-6-17	Groundwater, Surface Water	Bans non-permitted discharge of any water contaminant.
NMWQA	20 NMAC 6.2, Section 1-201	Groundwater, Surface Water	Requires that NMED be notified of any discharge which could affect surface water or groundwater quality.
NMWQA	20 NMAC 6.2, Section 3-104	Groundwater	Discharge plan may be required for any discharge affecting groundwater quality.

TABLE 2-2
ACTION-SPECIFIC POTENTIALLY APPLICABLE STANDARDS FOR THE S/TSIU

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Regulatory Program/Authority	Citation	Medium of Potential Interest	Description
NMWQA	20 NMAC 6.2, Section 4-103	Groundwater, Surface Water	Abatement standards and requirements for the vadose zone, groundwater and surface water.
Occupational Safety and Health Act (OSHA)	29 CFR 1910, 1926, 1954	All Media	These standards establish safety requirements for hazardous waste operations and sets exposure limits of chemicals.
RCRA	42 USC Sections 8901 et. seq.	Hazardous Waste	Regulates treatment, storage, and disposal of hazardous waste and encourages resource conservation and recycling.

TABLE 2-3
LOCATION-SPECIFIC POTENTIALLY APPLICABLE STANDARDS FOR THE S/TSIU

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Regulatory Program/Authority	Citation	Medium of Potential Interest	Notes
National Historic Preservation Act	36 CFR 63	Historic, Archaeological	Establishes procedures for determining a property's eligibility for inclusion in the National Register of Historic Places.
National Historic Preservation Act	36 CFR 800	Historic, Archaeological	Requires that federal agencies consider the effects of actions on historic properties and archaeological resources.
National Historic Preservation Act of 1979	36 CFR 296 43 CFR 7	Historic, Archaeological	Establishes procedures to be followed by federal land managers in providing protection for archaeological resources.
Standards and Guidelines for Archaeology and Historic Preservation	48 CRF 44716	Archaeological	Provides guidelines for conducting archaeological surveys.
American Indian Religious Freedom Act of 1978	42 USC 1996	Cultural	Requires consultation with local tribes if a project could effect ceremonial, religious, or burial sites.
American Indian Graves Freedom and Reparation Act	25 USC 3001 through 25 USC 3013	Cultural	Requires that project activities cease if Native American graves are discovered.
Migratory Bird Treaty Act	50 CFR 10, 21	Wildlife	Prohibits pursuit, hunting, taking, capture, possession, or killing of all migratory birds or their nests or eggs.
Bald and Golden Eagle Protection Act	50 CFR 10, 22	Wildlife	Prohibits taking or killing of bald and golden eagles.
Endangered Species Act of 1973	40 CFR 17 and 50 CFR 402	Plant, Wildlife	Requires that actions do not jeopardize endangered species or adversely modify their critical habitat, and establishes the process for consulting with the US Fish and Wildlife Service.
Fish and Wildlife Coordination Act	40 CFR 6.302g	Surface Water	Requires that federal agencies be consulted prior to modifying any stream so that wildlife will be protected.
Endangered Species Act	16 USC 1531	Wildlife	Protects endangered species and restricts activities within their habitat.
Resource Conservation and Recovery Act (RCRA)	40 CFR 241.202	All Media	Establishes standards for sitting RCRA solid-waste disposal facilities.

TABLE 2-3
LOCATION-SPECIFIC POTENTIALLY APPLICABLE STANDARDS FOR THE S/TSIU

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Regulatory Program/Authority	Citation	Medium of Potential Interest	Notes
Fish and Wildlife Coordination Act	40 CFR 6.302	Rivers	Protects wildlife habitats and prevents the modification of streams or rivers that effect fish or wildlife.
Executive Order, 11990	40 CFR 6 Appendix A	Wetlands	Protects wetlands and regulates activities conducted in a wetland area in order to minimize potential destruction, loss or degradation of the wetlands.
Clean Water Act	40 CFR 230 33 CFR 320-330	Wetlands	Prohibits filling of wetlands and prohibits the discharge dredged or filled material to a wetland without a permit.
Executive Order, 11988	40 CFR 6 Appendix A	Floodplains	Restricts the types of activities that can be conducted within a floodplain to minimize harm and preserve natural values.
New Mexico Cultural Properties Act	NMSA 18.6	Historic, Archaeological	Requires identification of cultural resources, assessment of potential effects, and consultation with the State Historic Preservation Officer.
New Mexico Wildlife Conservation Act, and New Mexico Endangered Plant Act	NMSA 17-2-27 through NMSA 17-2-46	Plant, Wildlife	Establishes the State's authority to conduct an investigation for the purpose of identifying endangered and threatened species and developing (if necessary) an appropriate management plan for ensuring the protection of such species.
New Mexico Prehistoric and Historic Sites and Preservation Act	NMSA 1978, Sections 18-8-1 through 18-8-8	Historic, Archaeological	Requires identification of historic resources, assessment of potential impacts, and consultation with State Historic Preservation Office.
National Environmental Policy Act	42 USC Section 4331 et. seq.	Ecosystems	Policy to encourage harmony between humans and the environment to minimize environmental damages and support health and welfare. The Act encourages coordination and cooperation between government agencies in planning and conduction of any action that will affect the government.
National Environmental Policy Act	40 CFR Part 6	Ecosystems	Procedures requiring integration of all applicable federal laws and executive orders into the environment review process mandated under the Act.

TABLE 3-1
SUMMARY OF SURFACE SOIL ARSENIC AND IRON RESULTS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Sample Location:	Pre-FS RAC	Units	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
Sample Depth (inch):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			11/06/04	11/06/04	11/06/04	11/06/04	11/06/04	10/28/04	10/28/04	11/06/04	10/29/04	11/06/04	10/27/04	10/28/04	10/28/04	10/29/04	10/29/04	11/06/04	10/27/04	10/27/04	10/30/04	10/27/04
Metals																						
Arsenic	27	mg/kg	3.70 J	1.80 J	3.50 J	1.60 J	3.30 J	3.80 J	3.20 J	4.30 J	5.00 J	3.00 J	3.40 J	2.50 J	6.40 J	5.60 J	6.80 J	4.50 J	3.60 J	3.60 J	5.00 J	3.50 J
Iron	100,000	mg/kg	13,100	9,630	15,300	45,500	9,750	19,300	18,500	21,200	16,800	13,900	17,100	17,000	21,000	19,100	24,000	17,100	20,100	16,500	19,300	18,000

Location ID:	Pre-FS RAC	Units	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40
Sample Depth(Inches):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			10/27/04	10/30/04	10/28/04	10/28/04	10/30/04	10/28/04	10/28/04	10/30/04	10/31/04	10/28/04	10/30/04	10/29/04	10/29/04	10/29/04	11/07/04	11/10/04	11/07/04	11/07/04	11/11/04	11/11/04
Metals																						
Arsenic	27	mg/kg	3.30 J	6.30 J	2.60 J	2.80 J	3.40 J	3.10 J	2.90 J	2.90 J	1.40 J	1.10 J	2.50 J	2.70 J	2.60 J	2.80 J	4.80 J	4.70 J	5.10 J	5.90 J	6.50 J	9.40 J
Iron	100,000	mg/kg	20,500	19,800	17,000	17,100	17,900	18,300	17,900	16,000	18,100	14,500	13,900	15,300	14,500	17,900	18,200	21,100	19,900	19,000	18,900	24,500

Location ID:	Pre-FS RAC	Units	S41	S42	S43	S44	S45	S46	S47	S48	S49	S50	S51	S52	S53	S54	S55	S56	S57	S58	S59	S60
Sample Depth(Inches):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			11/07/04	11/08/04	11/11/04	11/11/04	11/08/04	11/08/04	11/11/04	11/11/04	11/07/04	11/08/04	11/09/04	11/11/04	11/07/04	11/08/04	11/09/04	11/09/04	11/08/04	11/08/04	10/30/04	10/30/04
Metals																						
Arsenic	27	mg/kg	6.20 UJ	6.30 J	3.70 J	0.980 J	8.00 J	8.20 J	13.3 J	7.30 J	10.3 J	1.80 J	5.20 J	3.70 J	15.1 J	7.30 J	4.50 J	3.10 J	3.50 J	3.90 J	18.9 J	21.8 J
Iron	100,000	mg/kg	33,600	25,100	12,800	7,170	57,500	39,400	34,900	21,000	41,000	13,900	25,500	14,300	45,700	34,800	24,200	18,600	34,600	32,700	62,400	58,600

Location ID:	Pre-FS RAC	Units	S61	S62	S63	SS97	SS98	SS99	SS100	SS101	SS102	SS103	SS104	SS105	SS106	SS107	SS108	SS109	SS110	SS111	SS112	SS113
Sample Depth(Inches):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			10/31/04	10/31/04	10/31/04	07/24/06	07/22/06	07/11/06	07/12/06	07/12/06	07/12/06	07/24/06	07/22/06	07/20/06	07/22/06	07/19/06	07/17/06	07/20/06	07/22/06	07/19/06	07/19/06	07/17/06
Metals																						
Arsenic	27	mg/kg	25.4 J	16.0 J	9.40 J	3.90	3.50	1.10	1.90	2.20	2.20	2.40	2.10	2.00	2.10	0.980	1.40	1.90	2.90	2.30	2.20	1.80
Iron	100,000	mg/kg	34,600	35,500	24,600	29,400	38,000	9,610	20,300	55,000	34,200	12,300	10,300	30,200	10,500	7,360 J	32,300	23,600	24,700	12,100 J	14,500 J	14,200

Location ID:	Pre-FS RAC	Units	SS114	SS115	SS116	SS117	SS118S	SS119S	SS120	SS121	SS122	SS123	SS124S	SS125S	SS126	SS127	SS128	SS129S	SS130	SS131S	SS132	SS133
Sample Depth(Inches):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			07/17/06	07/23/06	07/22/06	07/20/06	07/19/06	07/13/06	07/17/06	07/11/06	07/18/06	07/13/06	07/19/06	07/19/06	07/22/06	07/20/06	07/20/06	07/19/06	07/21/06	07/18/06	07/24/06	07/22/06
Metals																						
Arsenic	27	mg/kg	1.80	3.10	3.60	5.40	1.60	1.70	1.80	3.20	0.760	2.00	2.70	1.30	2.00	1.90	1.80	2.10	1.50	1.80	2.90	2.50
Iron	100,000	mg/kg	31,800	24,200	34,400	31,100 J	13,600 J	22,100	35,400	21,400 J	10,600 J	14,300	26,700 J	12,300 J	19,000	27,700 J	31,800 J	26,000 J	21,200	17,500 J	26,200	23,300

Location ID:	Pre-FS RAC	Units	SS134	SS135	SS136	SS137	SS138	SS139	SS140	SS141	SS142	SS143	SS144	SS145	SS146	SS147	SS148	SS149	SS150	SS151	SS152	SS153
Sample Depth(Inches):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			07/21/06	07/21/06	07/22/06	07/21/06	07/23/06	07/24/06	07/22/06	07/23/06	07/21/06	07/24/06	07/22/06	07/23/06	07/23/06	07/22/06	07/18/06	07/24/06	07/24/06	07/15/06	07/15/06	07/15/06
Metals																						
Arsenic	27	mg/kg	2.20	2.10	2.30	2.30	2.40	2.70	3.20	1.90	3.20	2.20	4.20	3.40	2.70	2.00	3.80	2.70	2.60	2.30	1.20	2.50
Iron	100,000	mg/kg	47,200	36,400	25,200	62,000	57,200	40,500	26,600	55,600	53,500	29,200	30,800	141,000	64,300	24,700	123,000 J	46,500	24,600	19,700	24,100	24,200

Location ID:	Pre-FS RAC	Units	SS154	SS155	SS156	SS157	SS158	SS159D	SS160	SS161D	SS162D	SS163D	SS164D	SS165D
Sample Depth(Inches):			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Collected:			07/16/06	07/16/06	07/13/06	07/15/06	07/16/06	07/16/06	07/16/06	07/16/06	07/11/06	07/11/06	07/14/06	07/14/06
Metals														
Arsenic	27	mg/kg	0.0400 U	1.80	2.10	1.70	2.50	3.4	0.95	2.2	1.9	0.92	1.9	1.8
Iron	100,000	mg/kg	24,400	23,300	28,600	20,100	20,100	30,100	18,400	18,800	16,200	12,700	9,460	10,600

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TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
2001	U01-2001	AOC Background Report, Chino 1995	1995	0-1"	not sieved	654870.780	2658493.164	32.8000800	-108.0435680	170	153	Y		
2002	U01-2002	AOC Background Report, Chino 1995	1995	0-1"	not sieved	655267.029	2662705.501	32.8011920	-108.0298610	186	167	Y		
2003	U01-2003	AOC Background Report, Chino 1995	1995	0-1"	not sieved	653325.700	2663627.527	32.7958600	-108.0268490	294	265	Y		
2004	U01-2004	AOC Background Report, Chino 1995	1995	0-1"	not sieved	654017.898	2662957.483	32.7977590	-108.0290340	172	155	Y		
2005	U01-2005	AOC Background Report, Chino 1995	1995	0-1"	not sieved	651650.919	2663754.729	32.7912580	-108.0264250	152	137	Y		
2006	U01-2006	AOC Background Report, Chino 1995	1995	0-1"	not sieved	650524.991	2663945.050	32.7881640	-108.0257990	150	135	Y		
2007	U01-2007	AOC Background Report, Chino 1995	1995	0-1"	not sieved	648773.724	2663880.215	32.7833500	-108.0260000	88	79	Y		
2008	U01-2008	AOC Background Report, Chino 1995	1995	0-1"	not sieved	648770.670	2663878.888	32.7833410	-108.0260040	214	193	Y		
2009	U01-2009	AOC Background Report, Chino 1995	1995	0-1"	not sieved	647572.619	2658250.339	32.7800190	-108.0443110	204	184	Y		
2010	U01-2010	AOC Background Report, Chino 1995	1995	0-1"	not sieved	652691.986	2664215.321	32.7941210	-108.0249330	199	179	Y		
2011	U01-2011	AOC Background Report, Chino 1995	1995	0-1"	not sieved	651473.461	2664692.260	32.7907740	-108.0233730	146	131	Y		
2012	U01-2012	AOC Background Report, Chino 1995	1995	0-1"	not sieved	654758.873	2664398.604	32.7998030	-108.0243480	69	62	Y		
ERA01		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	617972.009	2636736.996	32.6985210	-108.1140540	--	3517	Y	Removed*	Borrow
ERA02		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	614507.011	2639087.005	32.6890130	-108.1063860	--	811	Y		
ERA03		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	613062.009	2639598.997	32.6850450	-108.1047090	--	709	Y		
ERA04		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	614512.998	2643462.001	32.6890600	-108.0921650	--	541	Y		
ERA05		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	614547.014	2643776.013	32.6891550	-108.0911450	--	399	Y		
ERA06		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	618149.006	2642362.985	32.6990470	-108.0957670	--	499	Y		
ERA07		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	609705.992	2641096.999	32.6758310	-108.0998130	--	789	Y		
ERA08		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	609384.014	2640076.006	32.6749390	-108.1031290	--	710	Y	Removed*	WBT
ERA09		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	613515.982	2649386.984	32.6863580	-108.0728990	--	562	Y		
ERA10		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	612552.990	2651319.997	32.6837230	-108.0666090	--	485	Y		
ERA11		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	602716.010	2653028.991	32.6566940	-108.0609860	--	276	Y		
ERA12		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	598790.994	2652202.999	32.6459010	-108.0636420	--	204	Y		
ERA13		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	612107.011	2656763.010	32.6825280	-108.0489150	--	126	Y		
ERA14		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	597769.017	2635249.992	32.6429780	-108.1187110	--	109	Y		
ERA15		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	620786.999	2628575.003	32.7061960	-108.1406130	--	712	Y		
ERA16		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	586145.006	2611137.001	32.6108260	-108.1969190	--	77	Y		
ERA17		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	586974.009	2612631.012	32.6131180	-108.1920760	--	57	Y		
ERA18		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	587334.995	2614268.015	32.6141260	-108.1867630	--	73	Y		
ERA19		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	585563.983	2615159.986	32.6092660	-108.1838470	--	62	Y		
ERA20		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	585436.991	2614671.006	32.6089120	-108.1854340	--	45	Y		
ERA21		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	585099.986	2614047.987	32.6079800	-108.1874540	--	48	Y		
ERA22		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	623082.014	2634381.997	32.7125490	-108.1217550	--	1120	Y		
ERA23		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	613644.990	2641016.992	32.6866570	-108.1001050	--	973	Y	Removed*	Ops Reclamation
ERA24		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	614747.989	2651501.014	32.6897570	-108.0660370	--	63	Y		
ERA25		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	608598.000	2657629.986	32.6728880	-108.0460750	--	70	Y		
ERA26		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	610167.015	2641490.005	32.6771010	-108.0985400	--	535	Y		
ERA27		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	588758.017	2645253.986	32.6182800	-108.0861410	--	328	Y		
ERA28		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	635693.009	2631937.010	32.7471930	-108.1298190	--	1060	Y		
ERA29		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	653750.990	2641025.006	32.7968940	-108.1004080	--	460	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
ERA30		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	647315.000	2665089.007	32.7793460	-108.0220580	--	102	Y		
ERA31		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	574691.984	2657662.001	32.5796910	-108.0457500	--	78	Y		
ERA32		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	646513.995	2638816.000	32.7769870	-108.1075360	--	419	Y		
ERA33		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	642325.997	2636187.009	32.7654570	-108.1160530	--	176	Y		
ERA34		Ecological Risk Assessment, Newfields 2005	2005	0-6"	2 mm sieve^2	646629.005	2662757.994	32.7774490	-108.0296380	--	57	Y		
FID 0		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	616828.811	2626577.181	32.6953000	-108.1470700	--	329	Y		
FID 1		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	625332.452	2664225.021	32.7189200	-108.0247400	--	143	Y		
FID 10		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	620561.989	2636911.369	32.7056410	-108.1135090	--	1020	Y		
FID 101		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	608735.664	2643808.296	32.6731820	-108.0909940	--	285	Y		
FID 102		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	604799.633	2644505.322	32.6623680	-108.0886980	--	287	Y		
FID 103		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010	0-6"	2 mm sieve^2	602216.563	2644915.336	32.6552710	-108.0873460	--	317	Y	Removed	IRA
FID 104		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010	0-6"	2 mm sieve^2	605612.285	2642797.984	32.6645900	-108.0942520	--	454	Y	Removed*	IRA
FID 105		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	613881.307	2640031.508	32.6873000	-108.1033110	--	1230	Y		
FID 106		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	608565.372	2652441.935	32.6727690	-108.0629350	--	450	Y		
FID 12		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	616897.123	2637286.041	32.6955700	-108.1122600	--	4260	Y	Removed*	IRA
FID 13		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	617045.390	2637627.900	32.6959800	-108.1111500	--	1970	Y		
FID 15		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	617713.596	2638949.138	32.6978260	-108.1068610	--	1360	Y		
FID 16		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	617063.361	2638873.938	32.6960380	-108.1071000	--	512	Y		
FID 17		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	617710.785	2636903.713	32.6978040	-108.1135100	--	4680	Y	Removed*	IRA
FID 18		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	609040.575	2643554.287	32.6740190	-108.0918220	--	326	Y		
FID 2		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	618469.103	2656648.402	32.7000150	-108.0493300	--	405	Y		
FID 20		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	612866.109	2640078.306	32.6845100	-108.1031500	--	790	Y		
FID 21		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	613697.651	2649267.161	32.6868560	-108.0732900	--	131	Y		
FID 22		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	606434.501	2647809.707	32.6668830	-108.0779730	--	285	Y		
FID 23		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	602770.491	2645930.926	32.6568000	-108.0840500	--	252	Y	Removed*	Borrow (WBT)
FID 24		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	578535.998	2656367.001	32.5902500	-108.0499800	--	121	Y		
FID 25		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	581913.504	2652250.313	32.5995100	-108.0633700	--	66	Y		
FID 26		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	577926.834	2657160.390	32.5885800	-108.0474000	--	75	Y		
FID 27		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	630414.800	2631251.479	32.7326800	-108.1320000	--	206	Y		
FID 28		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	607544.515	2656084.395	32.6699840	-108.0510910	--	348	Y		
FID 3		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	599371.963	2636002.644	32.6473900	-108.1162800	--	236	Y		
FID 30		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	614771.262	2626020.397	32.6896400	-108.1488600	--	90	Y		
FID 31		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	586152.892	2651782.210	32.6111600	-108.0649200	--	187	Y		
FID 32		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	622947.567	2626795.207	32.7121200	-108.1464200	--	2120	Y		
FID 33		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	597385.177	2649476.540	32.6420200	-108.0724900	--	308	Y		
FID 34		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	620256.499	2623972.714	32.7047000	-108.1555700	--	209	Y		
FID 35		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	617751.360	2659913.875	32.6980600	-108.0387100	--	210	Y		
FID 37		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve^2	620831.901	2642490.509	32.7064220	-108.0953740	--	805	Y		
FID 39		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	628343.875	2634164.042	32.7270100	-108.1225100	--	414	Y		
FID 4		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve^2	631067.267	2633421.179	32.7344900	-108.1249500	--	599	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
FID 43		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010	0-6"	2 mm sieve[2]	603552.270	2644578.646	32.6589400	-108.0884500	--	486	Y	Removed*	Borrow (WBT)
FID 6		Five Year pH Monitoring Report, Arcadis 2017a	2009	0-6"	2 mm sieve[2]	619895.395	2626709.294	32.7037300	-108.1466700	--	182	Y		
FID 7		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve[2]	610671.909	2651048.696	32.6785510	-108.0674780	--	242	Y		
FID 8		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve[2]	606421.742	2643493.103	32.6668200	-108.0920000	--	430	Y		
R-01	U06-3016	AOC Background Report, Chino 1995	1995	0-1"	not sieved	601502.878	2608704.511	32.6530160	-108.2049930	79	71	Y		
R-03	U06-3026	AOC Background Report, Chino 1995	1995	0-1"	not sieved	613627.954	2612624.503	32.6863800	-108.1923900	170	153	Y		
R-05	U06-3015	AOC Background Report, Chino 1995	1995	0-1"	not sieved	607511.881	2608687.236	32.6695320	-108.2051170	186	167	Y		
R-07	U06-3024	AOC Background Report, Chino 1995	1995	0-1"	not sieved	605734.870	2622372.502	32.6647720	-108.1606270	207	186	Y		
R-08	U06-3028	AOC Background Report, Chino 1995	1995	0-1"	not sieved	603090.869	2613165.514	32.6574230	-108.1905160	114	103	Y		
R-12	U06-3030	AOC Background Report, Chino 1995	1995	0-1"	not sieved	594224.561	2616782.489	32.6330850	-108.1786700	73	66	Y		
R-14	U06-3037	AOC Background Report, Chino 1995	1995	0-1"	not sieved	592949.320	2624423.490	32.6296460	-108.1538360	43	39	Y		
Reference Plot #1 (Wes		Five Year pH Monitoring Report, Arcadis 2017a	2009, 2010, 2014	0-6"	2 mm sieve[2]	620889.236	2629291.749	32.7064820	-108.1382840	--	1857	Y		
Reference Plot #2 (Nort		Five Year pH Monitoring Report, Arcadis 2017a	2010, 2014	0-6"	2 mm sieve[2]	623257.066	2631947.521	32.7130110	-108.1296710	--	672	Y		
Reference Plot #3 (Nort		Five Year pH Monitoring Report, Arcadis 2017a	2010, 2014	0-6"	2 mm sieve[2]	619901.600	2637640.457	32.7038310	-108.1111330	--	2457	Y		
Reference Plot #4 (Eas		Five Year pH Monitoring Report, Arcadis 2017a	2010, 2014	0-6"	2 mm sieve[2]	614751.433	2639835.318	32.6896900	-108.1039550	--	1418	Y		
S78	U04-1113	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	590227.316	2632655.468	32.6222290	-108.1270720	207	207	Y		
S79	U04-1114	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	590163.699	2637659.377	32.6220920	-108.1108190	157	157	Y		
SS100	U04-1135	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	641472.113	2651849.939	32.7632140	-108.0650930	234	164	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
SS101	U04-1136	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	640599.572	2657436.264	32.7608480	-108.0469140	206	144	Y		
SS102	U04-1137	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	644211.219	2664449.121	32.7708120	-108.0241220	201	141	Y		
SS108	U04-1143	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	631172.925	2662553.332	32.7349650	-108.0302110	252	176	Y		
SS110	U04-1145	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	627617.998	2632796.780	32.7250040	-108.1269490	692	484	Y		
SS113	U04-1148	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	631963.248	2653021.813	32.7370850	-108.0612140	209	146	Y		
SS114	U04-1149	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	628554.990	2661385.893	32.7277630	-108.0339910	119	83	Y		
SS119D	U04-1148	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	626607.364	2654304.907	32.7223710	-108.0570040	125	125	Y		
SS120	U04-1149	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	620858.117	2661067.331	32.7066060	-108.0349800	119	83	Y		
SS149	U04-1190	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	591116.292	2649489.245	32.6247890	-108.0724030	628	440	Y		
SS150	U04-1191	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	591114.307	2653625.537	32.6248080	-108.0589680	605	424	Y		
SS151	U04-1192	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	588309.346	2635041.201	32.6169750	-108.1193070	259	181	Y		
SS152	U04-1193	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	586903.881	2640149.399	32.6131490	-108.1027050	237	166	Y		
SS153	U04-1194	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	586306.127	2645235.684	32.6115400	-108.0861820	438	307	Y		
SS154	U04-1195	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	586954.404	2649237.218	32.6133480	-108.0731910	372	260	Y		
SS155	U04-1196	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	587030.587	2653503.773	32.6135830	-108.0593350	387	271	Y		
SS157	U04-1198	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	581724.503	2649431.631	32.5989730	-108.0725210	141	99	Y		
SS158	U04-1199	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	581830.815	2653847.367	32.5992920	-108.0581830	247	173	Y		
SS99	U04-1134	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	639798.212	2643441.733	32.7585600	-108.0924320	93	65	Y		
West-01		Five Year Report Amendment Study, Arcadis 2017b	2008	0-6"	2 mm sieve^2	620676.835	2629470.743	32.7059	-108.1377	--	805	Y		
West Ref-01		Five Year Report Amendment Study, Arcadis 2017b	2008	0-6"	2 mm sieve^2	620895.653	2629286.815	32.7065	-108.1383	--	873	Y		
North Ref-01		Five Year Report Amendment Study, Arcadis 2017b	2008	0-6"	2 mm sieve^2	623252.943	2631938.713	32.7130	-108.1297	--	1012	Y		
East Ref-01		Five Year Report Amendment Study, Arcadis 2017b	2008	0-6"	2 mm sieve^2	614754.960	2639821.606	32.6897	-108.1040	--	977	Y		
North East Ref-01		Five Year Report Amendment Study, Arcadis 2017b	2008	0-6"	2 mm sieve^2	619890.368	2637650.732	32.7038	-108.1111	--	3085	Y		
STS-SS-2010-016		Five Year pH Monitoring Report, Arcadis 2017a	2010	0-6"	2 mm sieve^2	621050.986	2637356.024	32.7069880	-108.1120680	--	1120	Y		
STS-SS-2010-017		Five Year pH Monitoring Report, Arcadis 2017a	2010	0-6"	2 mm sieve^2	617464.171	2638594.326	32.6971380	-108.1080120	--	2060	Y		
STS-SS-2010-018		Five Year pH Monitoring Report, Arcadis 2017a	2010	0-6"	2 mm sieve^2	619916.129	2638515.163	32.7038770	-108.1082900	--	1100	Y		
T-01	U06-3007	AOC Background Report, Chino 1996	1995	0-1"	not sieved	611335.947	2639534.738	32.6803000	-108.1049040	1330	1729	Y		
T-03	U06-3022	AOC Background Report, Chino 1996	1995	0-1"	not sieved	597545.876	2645955.991	32.6424390	-108.0839280	554	499	Y		
T-04	U06-3008	AOC Background Report, Chino 1996	1995	0-1"	not sieved	604970.956	2642887.008	32.6628280	-108.0939580	549	714	Y	Removed*	Borrow (WBT)
T-05	U06-3018	AOC Background Report, Chino 1996	1995	0-1"	not sieved	603851.947	2645936.003	32.6597730	-108.0840420	543	489	Y	Removed*	Borrow (WBT)
T-08	U06-3012	AOC Background Report, Chino 1996	1995	0-1"	not sieved	594868.863	2645548.009	32.6350780	-108.0852330	647	582	Y	Removed*	Ops Reclamation
T-09	U06-3013	AOC Background Report, Chino 1996	1995	0-1"	not sieved	592399.858	2647114.986	32.6283020	-108.0801240	645	581	Y		
T-12	U06-3003	AOC Background Report, Chino 1996	1995	0-1"	not sieved	585043.572	2642599.015	32.6080520	-108.0947350	216	194	Y		
T-15	U06-3001	AOC Background Report, Chino 1996	1995	0-1"	not sieved	602196.797	2633270.742	32.6551340	-108.1251810	773	696	Y		
U04-1001		AOC Background Report, Chino 1996	1995	0-1"	not sieved	619720.484	2637629.985	32.7033330	-108.1111660	3560	3204	Y		
U04-1002		AOC Background Report, Chino 1996	1995	0-1"	not sieved	616606.994	2637989.236	32.6947780	-108.1099720	5240	4716	Y	Removed*	IRA
U04-1003		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614282.179	2638171.243	32.6883890	-108.1093600	1880	2444	Y	Removed*	Borrow (WBT)
U04-1004		AOC Background Report, Chino 1996	1995	0-1"	not sieved	616287.613	2640346.991	32.6939160	-108.1023050	1140	1140	Y		
U04-1007		AOC Background Report, Chino 1996	1995	0-1"	not sieved	620170.874	2643338.742	32.7046110	-108.0926110	845	761	Y		
U04-1008		AOC Background Report, Chino 1996	1995	0-1"	not sieved	618974.607	2640806.763	32.7013050	-108.1008320	644	580	Y		
U04-1009		AOC Background Report, Chino 1996	1995	0-1"	not sieved	617513.891	2642998.996	32.6973050	-108.0936940	803	723	Y		
U04-1010		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614531.381	2643547.235	32.6891110	-108.0918880	1230	1107	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
U04-1011		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614224.494	2640965.502	32.6882500	-108.1002780	990	891	Y		
U04-1012		AOC Background Report, Chino 1996	1995	0-1"	not sieved	616925.014	2651468.013	32.6957410	-108.0661590	309	278	Y		
U04-1013		AOC Background Report, Chino 1996	1995	0-1"	not sieved	617419.206	2648869.238	32.6970830	-108.0746110	521	469	Y		
U04-1014		AOC Background Report, Chino 1996	1995	0-1"	not sieved	620167.626	2649020.739	32.7046390	-108.0741390	504	454	Y		
U04-1015		AOC Background Report, Chino 1996	1995	0-1"	not sieved	615018.317	2654129.745	32.6905160	-108.0574940	330	297	Y		
U04-1016		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614062.812	2649041.490	32.6878590	-108.0740260	922	830	Y		
U04-1017		AOC Background Report, Chino 1996	1995	0-1"	not sieved	619400.887	2655469.987	32.7025700	-108.0531670	216	194	Y		
U04-1018		AOC Background Report, Chino 1996	1995	0-1"	not sieved	646917.446	2638994.508	32.7780970	-108.1069580	175	158	Y		
U04-1019		AOC Background Report, Chino 1996	1995	0-1"	not sieved	616899.365	2660583.748	32.6957220	-108.0365270	245	221	Y		
U04-1020		AOC Background Report, Chino 1996	1995	0-1"	not sieved	617632.513	2657765.244	32.6977220	-108.0456940	436	392	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
U04-1021		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614323.314	2660091.492	32.6886380	-108.0381110	280	252	Y		
U04-1022		AOC Background Report, Chino 1996	1995	0-1"	not sieved	626224.432	2635409.007	32.7211940	-108.1184430	1790	1611	Y		
U04-1023		AOC Background Report, Chino 1996	1995	0-1"	not sieved	622309.178	2633245.261	32.7104160	-108.1254440	3410	3069	Y		
U04-1024		AOC Background Report, Chino 1996	1995	0-1"	not sieved	620299.675	2629163.999	32.7048610	-108.1386940	2040	1836	Y		
U04-1025		AOC Background Report, Chino 1996	1995	0-1"	not sieved	618136.015	2629507.994	32.6989170	-108.1375550	2490	2241	Y		
U04-1026		AOC Background Report, Chino 1996	1995	0-1"	not sieved	618136.015	2629507.994	32.6989170	-108.1375550	2260	2034	Y		
U04-1028		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614661.048	2629019.504	32.6893610	-108.1391110	1340	1206	Y		
U04-1029		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614413.449	2627300.996	32.6886670	-108.1446940	372	335	Y		
U04-1030		AOC Background Report, Chino 1996	1995	0-1"	not sieved	617144.617	2626437.497	32.6961670	-108.1475270	837	753	Y		
U04-1031		AOC Background Report, Chino 1996	1995	0-1"	not sieved	620408.514	2626515.515	32.7051390	-108.1473050	1740	1566	Y		
U04-1032		AOC Background Report, Chino 1996	1995	0-1"	not sieved	620305.516	2623789.502	32.7048330	-108.1561660	1040	936	Y		
U04-1033		AOC Background Report, Chino 1996	1995	0-1"	not sieved	617667.820	2623832.754	32.6975840	-108.1559990	562	506	Y		
U04-1034		AOC Background Report, Chino 1996	1995	0-1"	not sieved	614629.424	2623635.258	32.6892300	-108.1566110	424	382	Y		
U04-1035	S1	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	624828.375	2632803.169	32.7173370	-108.1269040	1240	868	Y		
U04-1036	S2	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	624569.668	2633792.886	32.7166330	-108.1236830	625	438	Y		
U04-1037	S3	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	623568.661	2631796.422	32.7138670	-108.1301660	2110	1477	Y		
U04-1038	S4	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	623569.772	2632795.224	32.7138770	-108.1269180	7990	5593	Y	Removed*	IRA
U04-1039	S5	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	623570.878	2633793.995	32.7138880	-108.1236710	1140	798	Y		
U04-1040	S6	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	622567.666	2629799.959	32.7111000	-108.1366470	3670	2569	Y		
U04-1041	S7	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	622568.754	2630798.730	32.7111110	-108.1334000	4760	3332	Y		
U04-1042	S8	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	622569.871	2631797.532	32.7111210	-108.1301530	6100	4270	Y	Removed*	IRA
U04-1043	S9	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	622570.983	2632796.334	32.7111320	-108.1269060	4950	3465	Y	Removed*	IRA
U04-1044	S10	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	622572.089	2633795.104	32.7111430	-108.1236580	6090	4263	Y	Removed*	IRA
U04-1045	S11	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	621567.747	2628802.267	32.7083430	-108.1398820	3880	2716	Y		
U04-1046	S12	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	621568.877	2629801.069	32.7083540	-108.1366340	3160	2212	Y		
U04-1047	S13	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	621832.985	2630832.143	32.7090890	-108.1332850	5920	4144	Y	Removed*	IRA
U04-1048	S14	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	621621.071	2631798.629	32.7085140	-108.1301410	8030	5621	Y	Removed*	IRA
U04-1049	S15	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	621622.183	2632797.429	32.7085240	-108.1268930	12100	8470	Y	Removed*	IRA
U04-1050	S16	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	621573.301	2633796.214	32.7083970	-108.1236460	8310	5817	Y	Removed*	IRA
U04-1051	S17	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	620568.957	2628803.378	32.7055980	-108.1398690	4650	3255	Y		
U04-1052	S18	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	620570.087	2629802.180	32.7056090	-108.1366220	3670	2569	Y		
U04-1053	S19	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	620571.163	2630650.967	32.7056190	-108.1338620	5660	3962	Y	Removed*	IRA
U04-1054	S20	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619570.168	2628804.490	32.7028530	-108.1398560	4240	2968	Y		
U04-1055	S21	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619571.298	2629803.292	32.7028640	-108.1366090	6670	4669	Y	Removed*	IRA
U04-1056	S22	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619572.375	2630652.074	32.7028740	-108.1338490	5210	3647	Y	Removed*	IRA
U04-1057	S23	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618571.379	2628805.602	32.7001080	-108.1398430	3030	2121	Y		
U04-1058	S24	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618572.474	2629804.373	32.7001190	-108.1365960	3910	2737	Y		
U04-1059	S25	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618573.595	2630573.170	32.7001280	-108.1340970	4630	3241	Y		
U04-1060	S26	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617572.591	2628806.714	32.6973620	-108.1398300	2600	1820	Y		
U04-1061	S27	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617573.722	2629805.486	32.6973730	-108.1365830	3150	2205	Y		
U04-1062	S28	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617722.047	2630675.655	32.6977880	-108.1337560	5840	4088	Y	Removed*	IRA
U04-1063	S29	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616573.803	2628807.797	32.6946170	-108.1398170	1690	1183	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
U04-1064	S30	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616574.934	2629806.599	32.6946280	-108.1365700	2350	1645	Y		
U04-1065	S31	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616576.028	2630945.404	32.6946400	-108.1328680	3120	2184	Y	Removed*	IRA
U04-1066	S32	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	614738.172	2631502.664	32.6895930	-108.1310400	2440	1708	Y		
U04-1067	S33	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	614819.581	2632616.098	32.6898250	-108.1274220	2570	1799	Y		
U04-1068	S34	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	614621.475	2633582.318	32.6892880	-108.1242790	4340	3038	Y	Removed*	Borrow
U04-1069	S35	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619917.989	2637094.013	32.7038720	-108.1129100	3270	2289	Y		
U04-1070	S36	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	620098.555	2637938.300	32.7043740	-108.1101670	3970	2779	Y		
U04-1071	S37	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619153.985	2636938.994	32.7017710	-108.1134070	1900	1330	Y	Removed*	IRA
U04-1072	S38	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619114.575	2637995.777	32.7016700	-108.1099720	4280	2996	Y	Removed*	IRA
U04-1073	S39	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619215.672	2638994.570	32.7019550	-108.1067260	2470	1729	Y		
U04-1074	S40	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619095.817	2639979.752	32.7016330	-108.1035220	3610	2527	Y		
U04-1075	S41	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618114.662	2636998.112	32.6989150	-108.1132060	8170	5719	Y	Removed*	IRA
U04-1076	S42	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618115.788	2638276.889	32.6989270	-108.1090490	5780	4046	Y	Removed*	IRA
U04-1077	S43	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618116.874	2638995.675	32.6989350	-108.1067130	2230	1561	Y		
U04-1078	S44	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618117.989	2639994.456	32.6989450	-108.1034660	908	636	Y		
U04-1080	S45	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617122.988	2636799.997	32.6961870	-108.1138420	8270	5789	Y	Removed*	IRA
U04-1081	S56	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	615121.637	2639997.778	32.6907090	-108.1034300	1490	1043	Y		
U04-1082	S46	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617062.038	2637466.991	32.6960250	-108.1116730	9000	6300	Y	Removed*	IRA
U04-1083	S47	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617043.999	2638791.997	32.6959850	-108.1073660	7990	5593	Y	Removed*	IRA
U04-1084	S48	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617119.205	2639995.573	32.6962000	-108.1034540	2520	1764	Y		
U04-1085	S49	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616117.092	2637000.316	32.6934240	-108.1131820	5430	3801	Y	Removed*	IRA
U04-1086	S50	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616538.208	2637999.086	32.6945890	-108.1099390	272	190	Y	Removed*	IRA
U04-1087	S51	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616187.982	2639001.994	32.6936330	-108.1066760	3790	2653	Y		
U04-1088	S52	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	616229.993	2639999.985	32.6937560	-108.1034320	1540	1078	Y		
U04-1089	S53	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	615273.013	2637203.997	32.6911050	-108.1125130	7880	5516	Y	Removed*	IRA
U04-1090	S54	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	615123.013	2638107.010	32.6907000	-108.1095760	2220	1554	Y	Removed*	Ops Reclamation
U04-1091	S55	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	614772.990	2639145.989	32.6897450	-108.1061960	1740	2610	Y	Removed*	Ops Reclamation
U04-1092	S57	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	614120.615	2638001.335	32.6879440	-108.1099110	1300	1950	Y	Removed*	Borrow (WBT)
U04-1093	S58	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	614121.707	2638800.108	32.6879520	-108.1073150	1590	2385	Y		
U04-1094	S59	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619669.075	2633601.331	32.7031620	-108.1242620	14100	9870	Y	Removed*	Borrow (WBT)
U04-1095	S60	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	619304.400	2633476.887	32.7021590	-108.1246640	18300	12810	Y	Removed*	Ops Reclamation
U04-1096	S61	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	618098.153	2633588.316	32.6988440	-108.1242910	30500	21350	Y	Removed*	Ops Reclamation
U04-1097	S62	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617761.561	2633757.139	32.6979200	-108.1237390	20100	14070	Y	Removed*	Ops Reclamation
U04-1098	S63	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	617309.661	2633732.061	32.6966780	-108.1238160	10500	7350	Y	Removed*	Ops Reclamation
U04-1099	S64	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	636499.167	2631183.440	32.7494030	-108.1322770	689	482	Y		
U04-1100	S65	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	634421.253	2631557.573	32.7436950	-108.1310410	660	462	Y		
U04-1101	S66	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	632606.094	2631426.465	32.7387040	-108.1314510	789	552	Y		
U04-1102	S67	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	630502.857	2631596.101	32.7329250	-108.1308800	899	629	Y		
U04-1103	S68	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	628776.576	2630809.538	32.7281740	-108.1334220	846	592	Y		
U04-1104	S69	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	626776.667	2630643.433	32.7226750	-108.1339440	710	497	Y		
U04-1105	S70	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	624446.087	2630119.691	32.7162650	-108.1356250	2280	1596	Y		
U04-1106	S71	Phase I Remedial Investigation Report, SRK 2008	2004	0-1"	.25 sieve	622021.990	2630472.006	32.7096050	-108.1344570	5350	3745	Y	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
U04-1107	S72	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	611902.416	2632139.171	32.6818030	-108.1289450	1160	1160	Y	Removed*	Borrow
U04-1108	S73	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	607892.366	2632378.882	32.6707830	-108.1281300	1290	1290	Y		
U04-1109	S74	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	604073.534	2632216.309	32.6602850	-108.1286240	529	529	Y		
U04-1110	S75	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	600284.039	2635391.253	32.6498920	-108.1182740	940	940	Y		
U04-1111	S76	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	598479.705	2631986.860	32.6449070	-108.1293190	278	278	Y		
U04-1112	S77	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	594805.310	2634139.935	32.6348240	-108.1222910	267	267	Y		
U04-1115	S80	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	611644.482	2639342.182	32.6811470	-108.1055320	1440	1440	Y		
U04-1116	S81	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	611644.489	2641276.198	32.6811600	-108.0992470	875	875	Y		
U04-1117	S82	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	611644.477	2643832.465	32.6811780	-108.0909380	455	455	Y		
U04-1118	S83	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	611644.496	2646833.881	32.6811980	-108.0811830	358	358	Y		
U04-1119	S84	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	609070.684	2639524.941	32.6740740	-108.1049170	362	362	Y	Removed*	Borrow (WBT)
U04-1120	S85	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	609053.370	2641276.198	32.6740380	-108.0992260	451	451	Y		
U04-1121	S86	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	609040.575	2643554.287	32.6740190	-108.0918220	513	513	Y		
U04-1122	S87	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	608718.726	2646702.118	32.6731550	-108.0815890	309	309	Y		
U04-1123	S88	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	608982.076	2649674.237	32.6738970	-108.0719320	484	484	Y		
U04-1124	S89	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	608923.551	2652338.921	32.6737530	-108.0632720	399	399	Y		
U04-1125	S90	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	610033.010	2654619.677	32.6768150	-108.0558680	255	255	Y		
U04-1126	S91	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	606644.353	2641432.274	32.6674180	-108.0986990	926	926	Y	Removed*	Borrow (WBT)
U04-1127	S92	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	606422.035	2643492.150	32.6668210	-108.0920030	581	581	Y		
U04-1128	S93	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	606114.831	2646863.157	32.6659990	-108.0810460	308	308	Y		
U04-1129	S94	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	605980.775	2649396.070	32.6656460	-108.0728140	313	313	Y		
U04-1130	S95	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	605880.764	2652324.267	32.6653890	-108.0632980	494	494	Y		
U04-1131	S96	Phase I Remedial Investigation Report, SRK 2008	2004	0-6"	2 mm sieve	605880.775	2654606.509	32.6654020	-108.0558820	237	237	Y		
U04-1132	SS97	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	637427.998	2626618.020	32.7519200	-108.1471360	412	288	Y		
U04-1133	SS98	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	635774.103	2633431.123	32.7474270	-108.1249600	475	333	Y		
U04-1138	SS103	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	634646.148	2629136.154	32.7442940	-108.1389190	497	348	Y		
U04-1139	SS104	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	637100.810	2637111.981	32.7511010	-108.1129990	407	285	Y		
U04-1140	SS105	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	630420.457	2629367.294	32.7326810	-108.1381270	226	158	Y		
U04-1141	SS106	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	629959.282	2633598.330	32.7314460	-108.1243640	531	372	Y		
U04-1142	SS107	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	630571.557	2648666.947	32.7332330	-108.0753660	194	136	Y		
U04-1144	SS109	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	626521.117	2629434.410	32.7219640	-108.1378730	597	418	Y		
U04-1146	SS111	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	626557.249	2640293.451	32.7221440	-108.1025640	551	386	Y		
U04-1147	SS112	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	624722.087	2645057.303	32.7171320	-108.0870590	558	391	Y		
U04-1150	SS115	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	622615.631	2628720.620	32.7112230	-108.1401570	3800	2660	Y		
U04-1151	SS116	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	622537.457	2634957.532	32.7110560	-108.1198790	1460	1022	Y		
U04-1152	SS117	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	619724.047	2637658.448	32.7033430	-108.1110740	4450	3115	Y		
U04-1154	SS118D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	.25 sieve	619356.828	2643030.467	32.7023710	-108.0936070	259	259	Y		
U04-1158	SS121	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	616358.262	2644604.416	32.6941390	-108.0884660	896	627	Y		
U04-1159	SS122	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	617920.943	2651011.046	32.6984750	-108.0676520	119	83	Y		
U04-1160	SS123	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	618270.278	2660077.824	32.6994870	-108.0381800	449	314	Y		
U04-1162	SS124D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	613136.715	2643481.011	32.6852770	-108.0920930	523	523	Y		
U04-1164	SS125D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	614418.219	2646924.196	32.6888220	-108.0809110	166	166	Y		

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Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
U04-1166	SS127	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	611472.745	2639334.203	32.6806750	-108.1055570	1020	1530	Y	Removed*	Ops Reclamation
U04-1167	SS128	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	610232.840	2643833.807	32.6772980	-108.0909230	454	318	Y		
U04-1169	SS129D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	610225.692	2647038.444	32.6772990	-108.0805080	337	337	Y		
U04-1170	SS130	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	609836.416	2648758.761	32.6762400	-108.0749140	227	159	Y		
U04-1172	SS131D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	608828.195	2652641.959	32.6734920	-108.0622870	444	444	Y		
U04-1173	SS132	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	609872.552	2656225.634	32.6763840	-108.0506470	740	518	Y		
U04-1175	SS134	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	607686.946	2641645.297	32.6702850	-108.0980150	334	234	Y	Removed*	Borrow
U04-1176	SS135	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	607622.876	2646317.770	32.6701400	-108.0828300	325	228	Y		
U04-1178	SS137	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	604779.260	2645970.444	32.6623220	-108.0839370	309	216	Y		
U04-1179	SS138	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	604181.195	2648650.026	32.6606950	-108.0752250	297	208	Y		
U04-1180	SS139	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	603965.828	2654756.863	32.6601400	-108.0553800	696	487	Y		
U04-1182	SS141	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	600331.132	2645745.850	32.6500940	-108.0846330	320	480	Y		
U04-1183	SS142	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	600051.517	2648815.812	32.6493450	-108.0746560	392	274	Y		
U04-1184	SS143	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	599665.717	2653313.162	32.6483120	-108.0600420	738	517	Y		
U04-1186	SS145	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	595143.914	2645115.445	32.6358320	-108.0866410	413	289	Y	Removed*	Ops Reclamation
U04-1187	SS146	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	596593.531	2646775.843	32.6398270	-108.0812580	710	497	Y		
U04-1189	SS148	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	591404.984	2646739.168	32.6255650	-108.0813380	632	442	Y		
U04-1197	SS156	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	581860.832	2645274.110	32.5993220	-108.0860230	196	137	Y		
U04-1200	ERA159D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	621281.566	2629231.851	32.7075600	-108.1384820	809	809	Y		
U04-1201	ERA160D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	617981.850	2629323.502	32.6984910	-108.1381540	34	34	Y		
U04-1202	ERA161D	Phase I Remedial Investigation Report, SRK 2008	2006	0-6"	2 mm sieve	614800.499	2629297.316	32.6897470	-108.1382090	556	556	Y		
U04-1203	ERA162	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	642299.465	2640321.566	32.7654130	-108.1026020	218	153	Y		
U04-1204	ERA163	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	643634.282	2638580.311	32.7690700	-108.1082780	208	146	Y		
U04-1205	ERA164	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	634282.684	2668911.418	32.7435430	-108.0095510	136	95	Y		
U04-1206	ERA165	Phase I Remedial Investigation Report, SRK 2008	2006	0-1"	.25 sieve	636311.445	2663927.294	32.7490960	-108.0257730	177	124	Y		
U05-4001	HR-01	AOC Background Report, Chino 1996	1995	0-1"	not sieved	641994.280	2619158.142	32.7644080	-108.1714470	318	286	Y		
U05-4004	HR-02	AOC Background Report, Chino 1996	1995	0-1"	not sieved	640329.186	2615792.561	32.7598010	-108.1823780	216	194	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	607429.590	2631002.115	32.6695	-108.1326	--	274	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	607755.378	2631587.698	32.6704	-108.1307	--	288	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	608117.556	2632173.370	32.6714	-108.1288	--	573	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	608443.365	2632758.928	32.6723	-108.1269	--	337	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	613437.925	2629111.540	32.6860	-108.1388	--	309	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	613908.764	2629851.279	32.6873	-108.1364	--	316	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	614307.032	2630529.261	32.6884	-108.1342	--	627	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	614705.486	2631145.696	32.6895	-108.1322	--	490	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620130.409	2629715.256	32.7044	-108.1369	--	646	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620110.030	2637128.386	32.7044	-108.1128	--	1930	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620386.845	2629100.792	32.7051	-108.1389	--	1370	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620508.770	2637683.112	32.7055	-108.1110	--	1670	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620643.472	2628424.819	32.7058	-108.1411	--	906	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620936.314	2627810.481	32.7066	-108.1431	--	977	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621089.907	2638053.743	32.7071	-108.1098	--	1790	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621096.581	2635531.510	32.7071	-108.1180	--	949	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621192.787	2627196.046	32.7073	-108.1451	--	637	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621495.294	2636086.239	32.7082	-108.1162	--	1640	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621486.108	2626427.936	32.7081	-108.1476	--	1050	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621634.667	2638424.267	32.7086	-108.1086	--	555	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621779.172	2625752.115	32.7089	-108.1498	--	448	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621857.635	2636640.857	32.7092	-108.1144	--	1560	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	621875.836	2630027.838	32.7092	-108.1359	--	2070	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622072.158	2625107.064	32.7097	-108.1519	--	917	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622204.941	2629444.371	32.7101	-108.1378	--	1640	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622215.733	2638825.631	32.7102	-108.1073	--	416	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622256.448	2637164.802	32.7103	-108.1127	--	1870	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622328.775	2624461.914	32.7104	-108.1540	--	606	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622534.235	2628799.401	32.7110	-108.1399	--	1390	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622618.808	2637719.395	32.7113	-108.1109	--	575	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622664.893	2634090.109	32.7114	-108.1227	--	1770	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622674.128	2630768.302	32.7114	-108.1335	--	1500	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622760.423	2639226.887	32.7117	-108.1060	--	666	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	622900.103	2628093.036	32.7120	-108.1422	--	1190	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623017.478	2638304.828	32.7124	-108.1090	--	362	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623192.862	2627509.500	32.7128	-108.1441	--	507	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623293.397	2630493.241	32.7131	-108.1344	--	1560	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623416.239	2638859.490	32.7135	-108.1072	--	633	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623425.899	2635199.438	32.7135	-108.1191	--	682	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623522.013	2626926.083	32.7137	-108.1460	--	608	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623723.505	2632801.217	32.7143	-108.1269	--	321	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623824.524	2635784.887	32.7146	-108.1172	--	958	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623851.357	2626281.164	32.7146	-108.1481	--	626	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	623949.050	2630218.294	32.7149	-108.1353	--	761	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	624180.622	2625667.014	32.7155	-108.1501	--	668	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	624186.779	2636370.226	32.7156	-108.1153	--	1100	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	624414.752	2632803.131	32.7162	-108.1269	--	472	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	624568.324	2629943.254	32.7166	-108.1362	--	1260	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	624585.425	2636955.648	32.7167	-108.1134	--	733	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	624984.163	2637510.300	32.7178	-108.1116	--	620	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	625069.617	2632804.945	32.7180	-108.1269	--	463	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	625187.600	2629668.225	32.7183	-108.1371	--	780	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	625760.950	2632776.104	32.7199	-108.1270	--	426	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	625879.731	2629362.661	32.7202	-108.1381	--	1100	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	626452.197	2632778.020	32.7218	-108.1270	--	633	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	626498.924	2629118.409	32.7219	-108.1389	--	177	Y		
STS-CG-201	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	627154.679	2628812.764	32.7237	-108.1399	--	434	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	594108.193	2647465.095	32.633	-108.079	--	263	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	619214.735	2645985.159	32.702	-108.084	--	876	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	618845.199	2648445.179	32.701	-108.076	--	587	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	623951.724	2642920.720	32.715	-108.094	--	794	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	626518.236	2635238.528	32.722	-108.119	--	458	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	614837.725	2650897.204	32.690	-108.068	--	290	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	624003.253	2624159.413	32.715	-108.155	--	387	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	625787.316	2636466.748	32.720	-108.115	--	449	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	613392.289	2646586.726	32.686	-108.082	--	246	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	595918.228	2651471.037	32.638	-108.066	--	324	Y		
STS-PCUG-2	UN04-24	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	610116.549	2647194.437	32.677	-108.080	--	254	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	617758.036	2646596.960	32.698	-108.082	--	536	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	623218.874	2645071.913	32.713	-108.087	--	602	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	598476.773	2646243.983	32.645	-108.083	--	354	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	617387.850	2649364.720	32.697	-108.073	--	357	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	624332.059	2636462.881	32.716	-108.115	--	864	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	620319.732	2640451.004	32.705	-108.102	--	994	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	622875.988	2636766.587	32.712	-108.114	--	1540	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	615592.515	2639516.100	32.692	-108.105	--	1210	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	610489.151	2643503.016	32.678	-108.092	--	520	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	621407.311	2641991.700	32.708	-108.097	--	558	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	622899.923	2628154.550	32.712	-108.142	--	976	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	624683.941	2641077.178	32.717	-108.100	--	551	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	622141.939	2639225.296	32.710	-108.106	--	1000	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	621413.523	2639531.011	32.708	-108.105	--	706	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	606856.359	2641340.086	32.668	-108.099	--	438	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	624352.507	2629081.465	32.716	-108.139	--	959	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	625050.089	2640155.437	32.718	-108.103	--	671	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	623623.111	2629694.499	32.714	-108.137	--	1500	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	601024.894	2645634.414	32.652	-108.085	--	304	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	600292.240	2647787.183	32.650	-108.078	--	420	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	599196.609	2649631.439	32.647	-108.072	--	273	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	601746.771	2648098.307	32.654	-108.077	--	364	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	608301.105	2645651.662	32.672	-108.085	--	287	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	608290.486	2650267.303	32.672	-108.070	--	270	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	604296.291	2646873.163	32.661	-108.081	--	244	Y		
STS-PCUG-2	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve^2	604291.337	2649027.392	32.661	-108.074	--	350	Y		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
STS-PCUG-	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	605377.956	2651184.024	32.664	-108.067	--	360	Y		
STS-PCUG-	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	601377.405	2650559.668	32.653	-108.069	--	312	Y		
STS-PCUG-	UN04-25	FS Data Collection, submitted herein	2011	0-6"	2 mm sieve[2]	595928.667	2646853.649	32.638	-108.081	--	587	Y		
6075-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622144.395	2630376.326	32.7099410	-108.1347700	593	415	N		
6097-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621994.392	2630376.730	32.7095290	-108.1347670	84	59	N		
6121-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621844.389	2630377.134	32.7091160	-108.1347640	159	111	N		
6198-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621394.792	2630528.297	32.7078820	-108.1342690	1463	1024	N		
6225-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621244.789	2630528.702	32.7074690	-108.1342660	1377	964	N		
6226-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621244.415	2630378.720	32.7074670	-108.1347530	2000	1400	N		
6227-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621244.005	2630228.706	32.7074650	-108.1352410	2730	1911	N		
6253-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621094.002	2630229.110	32.7070530	-108.1352380	275	193	N		
6254-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621094.412	2630379.093	32.7070550	-108.1347510	820	574	N		
6255-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621094.786	2630529.107	32.7070570	-108.1342630	2152	1506	N		
6265-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620943.999	2630229.483	32.7066400	-108.1352360	128	90	N		
6266-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620944.409	2630379.497	32.7066430	-108.1347480	2609	1826	N		
6267-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620944.784	2630529.481	32.7066450	-108.1342600	1865	1306	N		
6278-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620793.996	2630229.886	32.7062280	-108.1352330	145	102	N		
6279-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620794.406	2630379.901	32.7062300	-108.1347450	926	648	N		
6280-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620794.817	2630529.886	32.7062330	-108.1342580	1720	1204	N		
6283-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620643.994	2630230.289	32.7058160	-108.1352300	132	92	N		
6284-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620644.404	2630380.275	32.7058180	-108.1347430	546	382	N		
6285-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620644.815	2630530.291	32.7058200	-108.1342550	2950	2065	N		
6287-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620494.027	2630230.693	32.7054040	-108.1352280	535	375	N		
6288-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620494.401	2630380.679	32.7054060	-108.1347400	1124	787	N		
6289-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620494.812	2630530.665	32.7054080	-108.1342530	145	102	N		
6293-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620344.398	2630381.083	32.7049930	-108.1347370	623	436	N		
6294-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620344.809	2630531.070	32.7049960	-108.1342500	116	81	N		
6298-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620194.396	2630381.456	32.7045810	-108.1347350	160	112	N		
6299-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620194.806	2630531.474	32.7045830	-108.1342470	156	109	N		
6305-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620044.393	2630381.861	32.7041690	-108.1347320	2215	1551	N		
6306-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620044.810	2639531.872	32.7042380	-108.1049860	198	139	N		
6312-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619894.390	2630382.265	32.7037560	-108.1347290	1474	1032	N		
6313-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619894.801	2630532.253	32.7037590	-108.1342420	2317	1622	N		
6314-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619895.213	2630682.273	32.7037610	-108.1337540	2521	1765	N		
6320-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619744.424	2630382.669	32.7033440	-108.1347270	536	375	N		
6321-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619744.798	2630532.658	32.7033470	-108.1342390	2441	1709	N		
6322-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619745.210	2630682.648	32.7033490	-108.1337520	1475	1033	N		
6328-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619594.421	2630383.042	32.7029320	-108.1347240	2160	1512	N		
6329-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619594.796	2630533.063	32.7029340	-108.1342360	1847	1293	N		
6330-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619595.207	2630683.053	32.7029360	-108.1337490	581	407	N		
6336-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619444.419	2630383.447	32.7025200	-108.1347210	489	342	N		
6337-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619444.793	2630533.437	32.7025220	-108.1342340	1239	867	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
6338-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619445.205	2630683.428	32.7025240	-108.1337460	2443	1710	N		
6344-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619294.416	2630383.851	32.7021070	-108.1347190	319	223	N		
6345-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619294.791	2630533.842	32.7021100	-108.1342310	1708	1196	N		
6346-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619295.202	2630683.834	32.7021120	-108.1337430	1442	1009	N		
6350-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619144.413	2630384.224	32.7016950	-108.1347160	1477	1034	N		
6351-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619144.788	2630534.247	32.7016970	-108.1342280	1624	1137	N		
6352-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619145.199	2630684.239	32.7017000	-108.1337410	1881	1317	N		
6354-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618994.411	2630384.629	32.7012830	-108.1347130	1282	897	N		
6355-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618994.822	2630534.621	32.7012850	-108.1342260	272	190	N		
6356-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618995.197	2630684.614	32.7012870	-108.1337380	903	632	N		
6357-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618844.408	2630385.033	32.7008710	-108.1347110	2152	1506	N		
6358-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618844.819	2630535.026	32.7008730	-108.1342230	225	158	N		
6360-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618694.406	2630385.406	32.7004580	-108.1347080	1803	1262	N		
6361-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618694.816	2630535.431	32.7004600	-108.1342200	194	136	N		
6362-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618094.432	2630386.993	32.6988090	-108.1346970	299	209	N		
6363-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618094.806	2630536.990	32.6988110	-108.1342100	92	64	N		
6364-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617944.429	2630387.397	32.6983970	-108.1346950	119	83	N		
6365-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617944.804	2630537.395	32.6983990	-108.1342070	920	644	N		
6366-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617945.215	2630687.393	32.6984010	-108.1337190	956	669	N		
6367-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617794.427	2630387.802	32.6979840	-108.1346920	182	127	N		
6368-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617794.801	2630537.800	32.6979870	-108.1342040	367	257	N		
6369-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617795.213	2630687.798	32.6979890	-108.1337170	2250	1575	N		
6370-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618083.826	2630675.696	32.6987820	-108.1337590	526	368	N		
6371-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620041.376	2630662.970	32.7041630	-108.1338180	1769	1238	N		
6372-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620195.152	2630666.358	32.7045850	-108.1338090	1515	1061	N		
6373-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620345.180	2630669.736	32.7049980	-108.1337990	2896	2027	N		
6382-EG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620495.142	2630658.011	32.7054100	-108.1338380	2674	1872	N		
2001-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621243.804	2629929.051	32.7074620	-108.1362150	367	257	N		
2002-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621093.330	2629928.959	32.7070480	-108.1362140	636	445	N		
2003-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620943.145	2629929.453	32.7066360	-108.1362110	2751	1926	N		
2004-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620793.105	2629930.132	32.7062230	-108.1362080	995	697	N		
2005-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620343.315	2629931.247	32.7049870	-108.1362000	1912	1338	N		
2006-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620190.875	2629931.580	32.7045680	-108.1361970	1009	706	N		
2007-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620043.310	2629932.051	32.7041620	-108.1361940	1746	1222	N		
2008-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619893.490	2629932.146	32.7037500	-108.1361930	2716	1901	N		
2009-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619743.268	2629932.701	32.7033380	-108.1361900	1920	1344	N		
2010-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619593.302	2629933.073	32.7029250	-108.1361870	2475	1733	N		
2011-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619443.154	2629933.597	32.7025130	-108.1361840	2880	2016	N		
2012-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619293.333	2629933.877	32.7021010	-108.1361820	1653	1157	N		
2013-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619159.376	2629933.864	32.7017330	-108.1361800	2355	1649	N		
2014-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618993.628	2630084.643	32.7012780	-108.1356890	273	191	N		
2015-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619143.812	2630084.241	32.7016910	-108.1356910	512	358	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
2016-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619293.633	2630083.837	32.7021030	-108.1356940	864	605	N		
2017-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619443.636	2630083.435	32.7025150	-108.1356970	152	106	N		
2018-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619292.998	2629783.917	32.7020990	-108.1366690	2608	1826	N		
2019-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619292.263	2629633.955	32.7020960	-108.1371570	1462	1023	N		
2020-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619442.364	2629637.184	32.7025080	-108.1371470	395	277	N		
2021-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619442.782	2629783.453	32.7025110	-108.1366720	1021	715	N		
2022-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619593.040	2629783.052	32.7029230	-108.1366750	2117	1482	N		
2023-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619592.787	2629642.598	32.7029220	-108.1371310	342	239	N		
2024-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619742.380	2629632.753	32.7033330	-108.1371650	260	182	N		
2025-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619742.896	2629782.896	32.7033350	-108.1366760	1144	801	N		
2026-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619892.718	2629782.125	32.7037470	-108.1366800	923	646	N		
2027-WG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620042.866	2629781.940	32.7041600	-108.1366820	390	273	N		
29083		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617663.530	2630616.856	32.6976260	-108.1339460	4188	2932	N		
29084		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617834.456	2630589.439	32.6980960	-108.1340370	5798	4059	N	Removed*	IRA
29085		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618001.681	2630584.007	32.6985560	-108.1340560	3587	2511	N	Removed*	IRA
29086		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618160.916	2630573.969	32.6989930	-108.1340900	4153	2907	N	Removed*	IRA
29087		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618323.006	2630544.713	32.6994390	-108.1341870	3982	2787	N		
29088		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618490.383	2630537.066	32.6998990	-108.1342130	4218	2953	N		
29089		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618658.646	2630537.851	32.7003610	-108.1342120	3954	2768	N	Removed*	IRA
29090		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618819.982	2630530.834	32.7008040	-108.1342370	5764	4035	N	Removed*	IRA
29091		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618982.284	2630657.877	32.7012520	-108.1338250	5322	3725	N	Removed*	IRA
29092		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619143.919	2630648.122	32.7016960	-108.1338580	4461	3123	N	Removed*	IRA
29093		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619305.112	2630653.132	32.7021390	-108.1338430	1669	1168	N	Removed*	IRA
29094		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619474.755	2630603.595	32.7026050	-108.1340060	3871	2710	N	Removed*	IRA
29095		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619639.084	2630580.314	32.7030560	-108.1340830	317	222	N	Removed*	IRA
29096		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619804.208	2630571.862	32.7035100	-108.1341120	4746	3322	N	Removed*	IRA
29097		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619967.038	2630551.161	32.7039580	-108.1341810	5994	4196	N	Removed*	IRA
29098		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620132.946	2630535.421	32.7044130	-108.1342340	923	646	N	Removed*	IRA
29099		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620299.953	2630466.223	32.7048720	-108.1344600	7407	5185	N	Removed*	IRA
29100		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620461.668	2630466.621	32.7053160	-108.1344600	6698	4689	N	Removed*	IRA
29101		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620627.769	2630460.141	32.7057730	-108.1344830	8099	5669	N	Removed*	IRA
29102		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620791.911	2630438.676	32.7062240	-108.1345540	5685	3979	N	Removed*	IRA
29103		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620954.224	2630433.631	32.7066700	-108.1345720	8989	6292	N	Removed*	IRA
29104		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621123.238	2630400.676	32.7071340	-108.1346810	12366	8656	N	Removed*	IRA
29105		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621289.338	2630394.196	32.7075910	-108.1347040	9223	6456	N	Removed*	IRA
29106		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621287.210	2630259.988	32.7075840	-108.1351400	7427	5199	N	Removed*	IRA
29107		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621123.804	2630252.910	32.7071350	-108.1351610	7638	5347	N	Removed*	IRA
29108		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620960.456	2630289.264	32.7066860	-108.1350420	3256	2280	N	Removed*	IRA
29109		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620794.158	2630275.411	32.7062290	-108.1350850	7703	5392	N	Removed*	IRA
29110		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620631.332	2630307.183	32.7057820	-108.1349800	9264	6485	N	Removed*	IRA
29111		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620467.569	2630336.093	32.7053320	-108.1348850	8572	6000	N	Removed*	IRA
29112		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620299.751	2630358.101	32.7048700	-108.1348120	6444	4511	N	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
29113		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620136.536	2630360.283	32.7044220	-108.1348030	9780	6846	N	Removed*	IRA
29114		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619974.683	2630382.954	32.7039770	-108.1347280	7914	5540	N	Removed*	IRA
29115		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619808.288	2630403.245	32.7035200	-108.1346600	10742	7520	N	Removed*	IRA
29116		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619640.246	2630427.068	32.7030580	-108.1345810	6245	4372	N	Removed*	IRA
29117		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619477.827	2630444.110	32.7026120	-108.1345240	7341	5139	N	Removed*	IRA
29118		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619312.948	2630417.464	32.7021590	-108.1346100	2501	1750	N	Removed*	IRA
29119		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619152.214	2630430.111	32.7017170	-108.1345670	4832	3382	N	Removed*	IRA
29120		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618988.286	2630427.585	32.7012660	-108.1345740	2414	1690	N	Removed*	IRA
29121		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618826.192	2630419.742	32.7008210	-108.1345980	6236	4365	N	Removed*	IRA
29122		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618660.166	2630425.299	32.7003640	-108.1345780	5250	3675	N	Removed*	IRA
29123		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618493.578	2630424.242	32.6999060	-108.1345800	5004	3503	N	Removed*	IRA
29124		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618333.839	2630419.696	32.6994670	-108.1345930	4588	3212	N		
29125		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618168.150	2630409.413	32.6990120	-108.1346250	7673	5371	N	Removed*	IRA
29126		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618003.250	2630416.020	32.6985590	-108.1346020	4807	3365	N	Removed*	IRA
29127		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617840.228	2630427.462	32.6981110	-108.1345630	4870	3409	N	Removed*	IRA
29128		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617674.617	2630466.398	32.6976560	-108.1344350	3718	2603	N	Removed*	IRA
29129		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	617505.542	2630598.105	32.6971920	-108.1340060	3223	2256	N		
29160		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621442.259	2630545.011	32.7080120	-108.1342150	3650	2555	N		
29161		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621277.719	2630565.645	32.7075600	-108.1341460	2824	1977	N	Removed*	IRA
29162		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621112.867	2630593.537	32.7071070	-108.1340540	3095	2167	N	Removed*	IRA
29163		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620948.431	2630628.844	32.7066560	-108.1339380	4117	2882	N	Removed*	IRA
29164		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620783.089	2630650.184	32.7062010	-108.1338670	2499	1749	N	Removed*	IRA
29165		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620618.903	2630661.499	32.7057500	-108.1338280	1461	1023	N	Removed*	IRA
29166		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620453.859	2630680.103	32.7052970	-108.1337660	3510	2457	N	Removed*	IRA
29167		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621606.655	2630549.568	32.7084640	-108.1342010	7525	5268	N	Removed*	IRA
29168		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621609.786	2630433.494	32.7084720	-108.1345790	3710	2597	N	Removed*	IRA
29169		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621773.379	2630438.757	32.7089220	-108.1345630	5386	3770	N	Removed*	IRA
29170		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621938.285	2630443.224	32.7093750	-108.1345500	5878	4114	N	Removed*	IRA
29171		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622103.100	2630415.364	32.7098280	-108.1346420	8752	6126	N	Removed*	IRA
29172		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622266.035	2630422.009	32.7102760	-108.1346220	2825	1978	N	Removed*	IRA
29173		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622269.973	2630290.929	32.7102850	-108.1350480	1365	956	N		
29174		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622106.749	2630283.667	32.7098370	-108.1350700	5649	3955	N	Removed*	IRA
29175		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621942.202	2630281.108	32.7093840	-108.1350770	3141	2199	N		
29176		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621778.316	2630276.212	32.7089340	-108.1350920	3908	2736	N		
29177		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621614.467	2630271.316	32.7084830	-108.1351060	3254	2278	N		
29208		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620303.560	2630246.730	32.7048800	-108.1351740	10134	7094	N	Removed*	IRA
29209		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620139.337	2630258.044	32.7044290	-108.1351360	9863	6904	N	Removed*	IRA
29210		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619974.432	2630253.576	32.7039750	-108.1351480	10619	7433	N	Removed*	IRA
29211		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619809.617	2630281.437	32.7035230	-108.1350560	1592	1114	N	Removed*	IRA
29212		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619646.478	2630282.726	32.7030740	-108.1350510	7807	5465	N	Removed*	IRA
29213		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619480.980	2630294.806	32.7026190	-108.1350100	4540	3178	N	Removed*	IRA
29214		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619317.685	2630286.805	32.7021710	-108.1350340	5320	3724	N	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
29215		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619153.463	2630298.119	32.7017190	-108.1349960	1192	835	N	Removed*	IRA
29216		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618988.830	2630313.093	32.7012670	-108.1349460	3039	2127	N	Removed*	IRA
29217		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618824.906	2630321.640	32.7008160	-108.1349170	7887	5521	N	Removed*	IRA
29218		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618660.683	2630332.955	32.7003650	-108.1348780	7068	4948	N	Removed*	IRA
29003		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622255.516	2630782.865	32.7102500	-108.1334490	5104	3573	N	Removed*	IRA
29004		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622251.160	2630946.670	32.7102390	-108.1329160	2647	1853	N		
29005		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622244.945	2631112.008	32.7102230	-108.1323790	7635	5344	N	Removed*	IRA
29006		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622241.166	2631277.876	32.7102140	-108.1318390	2855	1999	N	Removed*	IRA
29007		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622236.412	2631441.773	32.7102020	-108.1313060	5707	3995	N	Removed*	IRA
29008		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622231.547	2631606.623	32.7101900	-108.1307700	3668	2568	N	Removed*	IRA
29009		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622226.608	2631772.334	32.7101780	-108.1302320	6471	4530	N	Removed*	IRA
29010		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622221.856	2631936.262	32.7101660	-108.1296990	9945	6961	N	Removed*	IRA
29011		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622386.539	2631942.566	32.7106190	-108.1296800	5569	3898	N	Removed*	IRA
29012		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622548.968	2631947.664	32.7110650	-108.1296650	9918	6943	N	Removed*	IRA
29013		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622714.152	2631943.820	32.7115190	-108.1296780	3938	2757	N		
29014		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622709.586	2632106.792	32.7115080	-108.1291490	3070	2149	N		
29015		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622544.293	2632110.668	32.7110530	-108.1291350	6480	4536	N	Removed*	IRA
29016		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622380.476	2632107.258	32.7106030	-108.1291440	10860	7602	N	Removed*	IRA
29017		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622219.171	2632103.179	32.7101600	-108.1291560	4682	3277	N	Removed*	IRA
29018		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622211.909	2632267.745	32.7101410	-108.1286210	6590	4613	N	Removed*	IRA
29019		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622205.884	2632432.438	32.7101260	-108.1280850	8464	5925	N	Removed*	IRA
29020		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622203.500	2632596.619	32.7101210	-108.1275510	2309	1616	N	Removed*	IRA
29021		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622197.440	2632761.312	32.7101050	-108.1270160	7414	5190	N	Removed*	IRA
29022		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622192.582	2632926.131	32.7100930	-108.1264800	7784	5449	N	Removed*	IRA
29023		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622189.037	2633090.186	32.7100850	-108.1259470	7927	5549	N	Removed*	IRA
29024		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622183.957	2633256.819	32.7100720	-108.1254050	4318	3022	N	Removed*	IRA
29025		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622179.026	2633422.561	32.7100590	-108.1248660	4266	2986	N	Removed*	IRA
29026		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622173.082	2633586.363	32.7100440	-108.1243330	6827	4779	N	Removed*	IRA
29027		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622169.392	2633751.309	32.7100350	-108.1237970	7883	5518	N	Removed*	IRA
29028		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622162.174	2633915.876	32.7100170	-108.1232620	7537	5276	N	Removed*	IRA
29029		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622157.210	2634081.619	32.7100040	-108.1227230	8918	6243	N	Removed*	IRA
29030		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622154.834	2634245.799	32.7099990	-108.1221890	6733	4713	N	Removed*	IRA
29031		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622317.108	2634228.279	32.7104450	-108.1222480	2976	2083	N		
29032		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622480.048	2634233.029	32.7108930	-108.1222340	2589	1812	N		
29033		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622644.332	2634238.705	32.7113450	-108.1222170	1576	1104	N		
29035		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622975.531	2634192.487	32.7122550	-108.1223700	1288	902	N		
29036		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622978.958	2634096.718	32.7122630	-108.1226810	2002	1401	N		
29037		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623140.732	2634088.732	32.7127080	-108.1227090	2144	1501	N		
29038		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622148.551	2634388.839	32.7099830	-108.1217240	3061	2143	N		
29039		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622143.815	2634552.029	32.7099710	-108.1211940	4009	2806	N		
29040		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622139.484	2634673.235	32.7099600	-108.1208000	2552	1786	N		
29059		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622359.348	2632770.988	32.7105500	-108.1269860	8420	5894	N	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
29060		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622516.821	2632766.318	32.7109830	-108.1270030	3657	2560	N	Removed*	IRA
29061		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622680.415	2632771.569	32.7114330	-108.1269870	10823	7576	N	Removed*	IRA
29062		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622851.286	2632776.687	32.7119020	-108.1269720	10077	7054	N	Removed*	IRA
29063		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623011.696	2632775.409	32.7123430	-108.1269770	3918	2743	N		
29064		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623188.304	2632784.387	32.7128290	-108.1269500	3634	2544	N		
29065		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623339.410	2632805.997	32.7132440	-108.1268810	6705	4693	N	Removed*	IRA
29066		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623506.680	2632810.735	32.7137040	-108.1268670	1736	1215	N	Removed*	IRA
29067		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623665.166	2632808.191	32.7141400	-108.1268770	1893	1325	N		
29068		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623839.973	2632810.490	32.7146200	-108.1268710	1586	1110	N	Removed*	IRA
29069		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623839.973	2632810.490	32.7146200	-108.1268710	1249	874	N		
29070		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623503.194	2632966.110	32.7136960	-108.1263620	1997	1398	N		
29071		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623498.385	2633113.576	32.7136840	-108.1258820	3975	2783	N		
29072		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623493.581	2633285.586	32.7136720	-108.1253230	1878	1314	N		
29073		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623487.156	2633452.271	32.7136550	-108.1247810	1065	746	N		
29074		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623337.599	2633449.184	32.7132440	-108.1247900	1038	726	N		
29075		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623175.900	2633442.803	32.7128000	-108.1248090	1909	1336	N		
29076		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623003.488	2633455.986	32.7123260	-108.1247650	5894	4126	N	Removed*	IRA
29077		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622834.638	2633443.680	32.7118620	-108.1248030	4962	3473	N	Removed*	IRA
29078		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622674.608	2633438.842	32.7114220	-108.1248180	5034	3524	N	Removed*	IRA
29079		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622502.842	2633441.937	32.7109500	-108.1248060	6909	4836	N	Removed*	IRA
29080		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622503.717	2633269.265	32.7109510	-108.1253670	2381	1667	N	Removed*	IRA
29081		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622506.695	2633099.613	32.7109580	-108.1259190	4851	3396	N	Removed*	IRA
29082		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622511.142	2632938.423	32.7109690	-108.1264430	4461	3123	N	Removed*	IRA
29130		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621985.078	2634406.141	32.7095340	-108.1216670	2692	1885	N	Removed*	IRA
29131		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621990.040	2634240.398	32.7095460	-108.1222050	3402	2381	N	Removed*	IRA
29132		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622321.155	2634064.965	32.7104550	-108.1227790	4877	3414	N		
29133		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622327.044	2633920.326	32.7104700	-108.1232490	8353	5847	N	Removed*	IRA
29134		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622331.933	2633755.507	32.7104820	-108.1237850	6237	4366	N	Removed*	IRA
29135		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622336.788	2633590.688	32.7104940	-108.1243210	4701	3291	N	Removed*	IRA
29136		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622500.381	2633595.935	32.7109440	-108.1243050	4632	3242	N	Removed*	IRA
29137		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622992.475	2633610.880	32.7122970	-108.1242610	5613	3929	N	Removed*	IRA
29138		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623002.297	2633280.327	32.7123210	-108.1253360	10154	7108	N	Removed*	IRA
29139		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622684.712	2632941.087	32.7114460	-108.1264360	8205	5743	N	Removed*	IRA
29140		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622529.635	2632606.074	32.7110170	-108.1275240	8262	5784	N	Removed*	IRA
29141		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622365.930	2632601.714	32.7105670	-108.1275360	7622	5335	N	Removed*	IRA
29142		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622370.753	2632436.895	32.7105790	-108.1280720	7950	5565	N	Removed*	IRA
29143		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623338.692	2632947.232	32.7132430	-108.1264220	4782	3348	N		
29144		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623348.513	2632619.481	32.7132680	-108.1274880	3300	2310	N		
29145		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622375.614	2632272.077	32.7105910	-108.1286080	11757	8230	N	Removed*	IRA
29146		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622539.320	2632276.408	32.7110410	-108.1285960	2560	1792	N	Removed*	IRA
29147		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622390.202	2631777.590	32.7106270	-108.1302160	9863	6904	N	Removed*	IRA
29148		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622553.907	2631781.924	32.7110770	-108.1302030	10242	7169	N	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
29149		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622558.532	2631611.723	32.7110890	-108.1307570	5163	3614	N	Removed*	IRA
29150		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622394.646	2631606.834	32.7106380	-108.1307710	5034	3524	N	Removed*	IRA
29151		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622399.545	2631442.939	32.7106500	-108.1313040	5229	3660	N	Removed*	IRA
29152		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622404.444	2631279.074	32.7106630	-108.1318370	1521	1065	N		
29153		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622409.345	2631115.179	32.7106750	-108.1323700	851	596	N		
29154		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621758.808	2630933.252	32.7088850	-108.1329550	6329	4430	N	Removed*	IRA
29155		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621923.602	2630938.639	32.7093380	-108.1329390	7790	5453	N	Removed*	IRA
29156		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622086.474	2630941.530	32.7097860	-108.1329310	4947	3463	N		
29157		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622082.440	2631107.797	32.7097760	-108.1323910	6843	4790	N	Removed*	IRA
29158		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621918.734	2631103.460	32.7093260	-108.1324030	4033	2823	N	Removed*	IRA
29159		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621753.940	2631098.074	32.7088730	-108.1324190	7202	5042	N	Removed*	IRA
29246		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622861.786	2632440.905	32.7119290	-108.1280640	3206	2244	N		
29247		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623020.741	2632609.682	32.7123670	-108.1275160	3748	2624	N		
29249		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622495.527	2633760.753	32.7109320	-108.1237690	3505	2454	N	Removed*	IRA
29250		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622659.233	2633765.077	32.7113820	-108.1237570	5047	3533	N	Removed*	IRA
29251		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622653.813	2633910.885	32.7113680	-108.1232830	3329	2330	N		
29252		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622812.777	2634079.656	32.7118060	-108.1227350	4420	3094	N		
29253		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622817.699	2633915.762	32.7118190	-108.1232680	1720	1204	N		
29254		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622824.027	2633770.481	32.7118350	-108.1237410	4100	2870	N	Removed*	IRA
29255		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622828.881	2633605.633	32.7118470	-108.1242770	5559	3891	N	Removed*	IRA
29256		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622664.087	2633600.260	32.7113940	-108.1242930	5373	3761	N	Removed*	IRA
29257		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622987.621	2633775.727	32.7122850	-108.1237250	6049	4234	N	Removed*	IRA
29258		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622982.768	2633940.542	32.7122730	-108.1231890	5872	4110	N	Removed*	IRA
29259		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623150.322	2633761.686	32.7127320	-108.1237720	1273	891	N		
29260		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623155.246	2633597.825	32.7127440	-108.1243050	829	581	N		
29261		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621502.686	2634061.531	32.7082050	-108.1227830	6816	4771	N	Removed*	IRA
29262		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621497.835	2634226.354	32.7081930	-108.1222470	8656	6059	N	Removed*	IRA
29263		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621492.984	2634391.177	32.7081810	-108.1217110	7501	5251	N	Removed*	IRA
29264		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621488.134	2634556.031	32.7081690	-108.1211750	5986	4190	N	Removed*	IRA
29265		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621651.728	2634561.274	32.7086190	-108.1211590	1973	1381	N	Removed*	IRA
29266		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621646.074	2634700.841	32.7086040	-108.1207050	2268	1588	N	Removed*	IRA
29267		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621815.433	2634565.594	32.7090690	-108.1211470	6226	4358	N	Removed*	IRA
29268		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621656.689	2634395.529	32.7086310	-108.1216980	5890	4123	N	Removed*	IRA
29269		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621820.283	2634400.772	32.7090810	-108.1216830	5580	3906	N	Removed*	IRA
29270		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621825.134	2634235.950	32.7090930	-108.1222180	6999	4899	N	Removed*	IRA
29271		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621661.540	2634230.706	32.7086430	-108.1222340	4587	3211	N	Removed*	IRA
29272		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621666.392	2634065.884	32.7086550	-108.1227700	3737	2616	N	Removed*	IRA
29273		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621829.986	2634071.129	32.7091050	-108.1227540	7544	5281	N	Removed*	IRA
29274		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621994.892	2634075.578	32.7095580	-108.1227410	8694	6086	N	Removed*	IRA
1041-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621102.176	2633379.060	32.7070990	-108.1249980	1551	1086	N		
1042-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621101.897	2633229.077	32.7070970	-108.1254850	2438	1707	N		
1043-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621101.401	2633079.064	32.7070950	-108.1259730	927	649	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
1044-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621101.052	2632928.896	32.7070930	-108.1264610	3933	2753	N		
1045-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621100.703	2632779.036	32.7070910	-108.1269480	2580	1806	N		
1046-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621100.319	2632628.838	32.7070880	-108.1274370	2074	1452	N		
1047-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621099.935	2632478.794	32.7070860	-108.1279250	2294	1606	N		
1048-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621099.479	2632328.842	32.7070840	-108.1284120	2756	1929	N		
1049-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621099.060	2632178.828	32.7070820	-108.1289000	1354	948	N		
1050-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621098.787	2632028.722	32.7070800	-108.1293880	2443	1710	N		
1051-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621098.260	2631878.739	32.7070770	-108.1298750	2075	1453	N		
1052-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621097.952	2631728.756	32.7070750	-108.1303630	2530	1771	N		
1053-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621097.500	2631578.588	32.7070730	-108.1308510	2788	1952	N		
1054-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621097.085	2631428.513	32.7070700	-108.1313390	2767	1937	N		
1055-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620952.173	2633379.570	32.7066870	-108.1249950	673	471	N		
1056-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620951.713	2633229.371	32.7066850	-108.1254830	2895	2027	N		
1057-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620802.207	2633379.988	32.7062750	-108.1249920	4155	2909	N		
1058-SG-A		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620652.095	2633380.252	32.7058620	-108.1249900	4657	3260	N		
1058-SG-B		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621062.242	2631580.304	32.7069760	-108.1308450	2870	2009	N		
1059-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621060.693	2631730.528	32.7069730	-108.1303570	3033	2123	N		
1060-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621058.855	2631880.290	32.7069690	-108.1298700	2359	1651	N		
1061-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621055.165	2632028.754	32.7069600	-108.1293870	2047	1433	N		
1062-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621056.053	2632179.907	32.7069630	-108.1288960	2805	1964	N		
1063-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621050.328	2632328.551	32.7069490	-108.1284130	5025	3518	N		
1064-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621050.814	2632480.872	32.7069510	-108.1279170	2367	1657	N		
1065-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621054.039	2632629.694	32.7069610	-108.1274340	4446	3112	N		
1066-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621052.608	2632778.380	32.7069580	-108.1269500	113	79	N		
1067-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621047.609	2632928.533	32.7069460	-108.1264620	2268	1588	N		
1068-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620929.425	2633079.050	32.7066220	-108.1259720	4100	2870	N		
1069-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620802.114	2633228.744	32.7062730	-108.1254840	4077	2854	N		
1070-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620596.329	2633377.607	32.7057090	-108.1249980	1461	1023	N		
1071-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620377.736	2633527.729	32.7051090	-108.1245080	4489	3142	N		
1072-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621242.799	2631129.483	32.7074690	-108.1323130	2237	1566	N		
1073-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621246.937	2631003.874	32.7074790	-108.1327210	2746	1922	N		
1074-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621396.580	2630975.968	32.7078900	-108.1328130	4793	3355	N		
8000-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621097.090	2631129.472	32.7070680	-108.1323110	3608	2526	N		
2000-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622002.316	2633225.837	32.7095720	-108.1255040	3531	2472	N		
2001-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622001.783	2633075.828	32.7095700	-108.1259920	1176	823	N		
2002-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621851.524	2633077.104	32.7091570	-108.1259860	2549	1784	N		
2003-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621851.910	2633227.115	32.7091590	-108.1254990	1110	777	N		
2004-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621701.908	2633227.501	32.7087470	-108.1254960	802	561	N		
2005-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621701.521	2633077.521	32.7087440	-108.1259840	2197	1538	N		
2006-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621701.099	2632927.510	32.7087420	-108.1264710	1300	910	N		
2007-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621700.713	2632777.499	32.7087400	-108.1269590	1769	1238	N		
2008-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621700.329	2632627.519	32.7087380	-108.1274470	719	503	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
2009-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621699.945	2632477.508	32.7087360	-108.1279340	478	335	N		
2010-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621699.525	2632327.528	32.7087330	-108.1284220	490	343	N		
2011-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621699.142	2632177.517	32.7087310	-108.1289100	189	132	N		
2012-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621698.760	2632027.506	32.7087290	-108.1293970	107	75	N		
2013-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621698.343	2631877.526	32.7087260	-108.1298850	261	183	N		
2014-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621698.108	2631727.515	32.7087250	-108.1303720	372	260	N		
2015-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621697.546	2631577.504	32.7087220	-108.1308600	979	685	N		
2016-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621697.167	2631427.523	32.7087200	-108.1313480	1936	1355	N		
2017-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621696.788	2631277.512	32.7087180	-108.1318350	2643	1850	N		
2018-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621846.755	2631277.135	32.7091300	-108.1318380	1546	1082	N		
2019-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621847.170	2631427.115	32.7091320	-108.1313500	492	344	N		
2020-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621850.679	2632777.145	32.7091520	-108.1269610	1901	1331	N		
2021-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621850.992	2632927.094	32.7091540	-108.1264740	975	683	N		
2022-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622000.377	2632926.338	32.7095650	-108.1264780	1444	1011	N		
5003-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623050.964	2633073.556	32.7124540	-108.1260080	2243	1570	N		
5004-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623053.134	2633223.474	32.7124610	-108.1255210	1569	1098	N		
5005-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623052.283	2633373.721	32.7124590	-108.1250330	1385	970	N		
5006-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623052.635	2633523.849	32.7124620	-108.1245440	1418	993	N		
5007-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623052.914	2633674.099	32.7124630	-108.1240560	994	696	N		
5008-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623053.341	2633823.704	32.7124660	-108.1235700	103	72	N		
5009-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622901.447	2632924.400	32.7120410	-108.1264920	2560	1792	N		
5010-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622901.504	2633075.235	32.7120430	-108.1260020	2262	1583	N		
5011-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622901.528	2633224.624	32.7120440	-108.1255160	1359	951	N		
5012-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622902.280	2633374.446	32.7120470	-108.1250290	2167	1517	N		
5013-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622902.559	2633524.267	32.7120490	-108.1245420	811	568	N		
5014-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622902.910	2633674.764	32.7120510	-108.1240530	631	442	N		
5015-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622903.774	2633824.217	32.7120550	-108.1235670	1844	1291	N		
5016-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622750.348	2632624.711	32.7116240	-108.1274650	2432	1702	N		
5017-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622750.732	2632774.840	32.7116260	-108.1269770	959	671	N		
5018-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622750.935	2632924.876	32.7116280	-108.1264890	2291	1604	N		
5019-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622751.321	2633074.882	32.7116300	-108.1260020	1023	716	N		
5020-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622751.492	2633224.119	32.7116320	-108.1255160	856	599	N		
5021-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622752.387	2633374.711	32.7116350	-108.1250270	2638	1847	N		
5022-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622752.811	2633524.655	32.7116370	-108.1245390	2341	1639	N		
5023-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622753.127	2633674.569	32.7116390	-108.1240520	1908	1336	N		
5024-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622753.298	2633824.728	32.7116410	-108.1235640	2211	1548	N		
5025-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622597.905	2631725.361	32.7111980	-108.1303880	2061	1443	N		
5026-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622577.986	2631875.065	32.7111440	-108.1299010	600	420	N		
5027-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622598.741	2632025.036	32.7112020	-108.1294130	447	313	N		
5028-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622599.159	2632175.074	32.7112050	-108.1289260	2285	1600	N		
5029-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622599.505	2632324.927	32.7112070	-108.1284380	2416	1691	N		
5030-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622599.815	2632475.272	32.7112090	-108.1279500	401	281	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
5031-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622600.272	2632625.217	32.7112110	-108.1274620	1066	746	N		
5032-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622600.693	2632775.039	32.7112140	-108.1269750	2022	1415	N		
5033-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622601.150	2632925.385	32.7112160	-108.1264860	2158	1511	N		
5034-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622601.248	2633087.478	32.7112170	-108.1259590	1686	1180	N		
5035-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622600.831	2633225.672	32.7112170	-108.1255100	731	512	N		
5036-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622602.238	2633375.312	32.7112220	-108.1250230	1447	1013	N		
5037-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622602.699	2633525.258	32.7112250	-108.1245360	730	511	N		
5038-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622603.051	2633675.172	32.7112270	-108.1240490	275	193	N		
5039-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622603.623	2633825.118	32.7112300	-108.1235610	738	517	N		
5040-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622447.867	2631725.617	32.7107860	-108.1303860	638	447	N		
5041-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622448.357	2631875.533	32.7107880	-108.1298980	690	483	N		
5042-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622448.956	2632025.633	32.7107910	-108.1294100	2356	1649	N		
5043-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622449.082	2632175.886	32.7107920	-108.1289220	1068	748	N		
5044-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622449.756	2632325.648	32.7107950	-108.1284350	1018	713	N		
5045-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622449.994	2632475.655	32.7107970	-108.1279470	996	697	N		
5046-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622450.051	2632625.662	32.7107980	-108.1274590	270	189	N		
5047-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622450.581	2632775.393	32.7108010	-108.1269720	1286	900	N		
5048-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622451.185	2632925.493	32.7108040	-108.1264850	334	234	N		
5049-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622450.810	2633074.176	32.7108040	-108.1260010	809	566	N		
5050-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622452.696	2633234.676	32.7108100	-108.1254790	841	589	N		
5051-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622452.199	2633375.576	32.7108100	-108.1250210	706	494	N		
5052-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622452.733	2633525.430	32.7108130	-108.1245340	243	170	N		
5053-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622453.268	2633675.377	32.7108150	-108.1240470	401	281	N		
5054-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622453.511	2633825.568	32.7108170	-108.1235580	2501	1751	N		
5055-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622296.385	2631125.933	32.7103640	-108.1323340	706	494	N		
5056-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622296.763	2631275.941	32.7103670	-108.1318460	565	396	N		
5057-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622297.178	2631425.950	32.7103690	-108.1313580	836	585	N		
5058-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622297.484	2631575.958	32.7103710	-108.1308710	1392	974	N		
5059-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622298.083	2631725.720	32.7103740	-108.1303840	408	286	N		
5060-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622298.390	2631875.913	32.7103760	-108.1298960	2605	1824	N		
5061-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622298.772	2632025.798	32.7103780	-108.1294080	1058	741	N		
5062-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622299.117	2632175.714	32.7103800	-108.1289210	704	493	N		
5063-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622299.463	2632325.814	32.7103820	-108.1284330	2175	1523	N		
5064-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622299.919	2632475.946	32.7103850	-108.1279450	475	333	N		
5065-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622300.267	2632625.892	32.7103870	-108.1274570	141	99	N		
5066-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622300.688	2632775.870	32.7103890	-108.1269700	2047	1433	N		
5067-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622301.109	2632926.032	32.7103910	-108.1264810	1914	1340	N		
5068-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622302.514	2633076.073	32.7103960	-108.1259940	261	183	N		
5069-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622301.521	2633225.062	32.7103950	-108.1255090	1145	802	N		
5070-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622302.379	2633375.902	32.7103980	-108.1250190	1256	879	N		
5071-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622303.386	2633525.574	32.7104020	-108.1245320	1332	932	N		
5072-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622303.118	2633676.103	32.7104030	-108.1240430	1527	1069	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
5073-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622303.689	2633826.265	32.7104050	-108.1235550	336	235	N		
5074-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622304.047	2633974.981	32.7104070	-108.1230710	777	544	N		
5076-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622146.383	2631126.340	32.7099520	-108.1323310	1185	830	N		
5077-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622146.760	2631276.319	32.7099540	-108.1318440	175	123	N		
5078-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622146.048	2631426.109	32.7099540	-108.1313560	1700	1190	N		
5079-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622147.554	2631576.337	32.7099590	-108.1308680	916	641	N		
5080-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622147.133	2631726.497	32.7099590	-108.1303800	821	575	N		
5081-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622148.825	2631876.110	32.7099650	-108.1298930	170	119	N		
5082-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622150.113	2632027.044	32.7099690	-108.1294030	534	374	N		
5083-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622149.770	2632176.097	32.7099700	-108.1289180	330	231	N		
5084-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622149.060	2632326.411	32.7099690	-108.1284290	145	102	N		
5085-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622149.444	2632476.081	32.7099710	-108.1279430	722	505	N		
5086-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622151.612	2632625.541	32.7099780	-108.1274570	125	88	N		
5087-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622150.173	2632777.114	32.7099750	-108.1269640	845	592	N		
5088-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622152.819	2632925.375	32.7099840	-108.1264820	222	155	N		
5089-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622152.620	2633076.459	32.7099840	-108.1259910	432	302	N		
5090-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622152.063	2633225.727	32.7099840	-108.1255060	1034	724	N		
5091-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622152.230	2633376.443	32.7099860	-108.1250160	918	643	N		
5092-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622157.457	2633526.434	32.7100010	-108.1245280	1055	739	N		
5093-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622153.371	2633676.154	32.7099910	-108.1240410	1454	1018	N		
5094-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622153.470	2633826.162	32.7099920	-108.1235540	230	161	N		
5095-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622154.296	2633976.233	32.7099960	-108.1230660	143	100	N		
5096-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622154.214	2634126.394	32.7099970	-108.1225780	2005	1404	N		
5098-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621995.966	2630976.738	32.7095380	-108.1328160	75	53	N		
5099-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621996.380	2631126.717	32.7095400	-108.1323280	1101	771	N		
5100-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621996.758	2631276.727	32.7095420	-108.1318410	2548	1784	N		
5101-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621997.172	2631426.736	32.7095440	-108.1313530	2702	1891	N		
5102-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621997.335	2631576.223	32.7095460	-108.1308670	1976	1383	N		
5103-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621998.402	2631727.587	32.7095500	-108.1303750	95	67	N		
5104-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621997.877	2631876.057	32.7095500	-108.1298920	2482	1737	N		
5105-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621997.893	2632026.434	32.7095510	-108.1294030	2844	1991	N		
5106-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621998.275	2632176.690	32.7095530	-108.1289150	1931	1352	N		
5107-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621999.097	2632325.409	32.7095570	-108.1284310	2981	2087	N		
5108-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621999.114	2632476.371	32.7095580	-108.1279410	2676	1873	N		
5109-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622000.082	2632625.798	32.7095620	-108.1274550	1563	1094	N		
5110-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621997.883	2632775.923	32.7095570	-108.1269670	89	62	N		
5111-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622000.377	2632926.338	32.7095650	-108.1264780	308	216	N		
5112-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622001.783	2633075.828	32.7095700	-108.1259920	925	648	N		
5113-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622002.316	2633225.837	32.7095720	-108.1255040	2387	1671	N		
5114-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622002.300	2633376.707	32.7095730	-108.1250130	541	379	N		
5115-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622002.689	2633526.716	32.7095760	-108.1245260	2194	1536	N		
5116-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622003.077	2633676.726	32.7095780	-108.1240380	149	104	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
5117-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622003.503	2633826.735	32.7095800	-108.1235500	1290	903	N		
5118-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622003.893	2633976.714	32.7095820	-108.1230630	1059	741	N		
5119-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622004.356	2634126.878	32.7095850	-108.1225750	134	94	N		
5120-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622004.419	2634277.594	32.7095860	-108.1220850	313	219	N		
5122-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621845.964	2630977.114	32.7091250	-108.1328130	241	169	N		
5123-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621846.377	2631127.125	32.7091280	-108.1323260	919	643	N		
5126-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621847.113	2631576.939	32.7091330	-108.1308630	654	458	N		
5127-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621846.838	2631726.701	32.7091340	-108.1303760	109	76	N		
5128-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621848.346	2631877.115	32.7091390	-108.1298870	813	569	N		
5129-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621847.856	2632026.354	32.7091390	-108.1294020	952	666	N		
5130-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621849.145	2632177.105	32.7091430	-108.1289120	86	60	N		
5131-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621849.419	2632326.991	32.7091450	-108.1284250	176	123	N		
5132-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621849.874	2632477.156	32.7091480	-108.1279370	637	446	N		
5133-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621850.295	2632627.197	32.7091500	-108.1274490	103	72	N		
5138-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621852.298	2633377.125	32.7091610	-108.1250110	345	242	N		
5139-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621852.686	2633527.104	32.7091630	-108.1245230	724	507	N		
5140-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621853.075	2633677.114	32.7091650	-108.1240360	539	377	N		
5141-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621853.501	2633827.125	32.7091680	-108.1235480	1303	912	N		
5142-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621853.891	2633977.104	32.7091700	-108.1230600	1691	1184	N		
5143-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621854.282	2634127.114	32.7091720	-108.1225730	326	228	N		
5144-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621854.673	2634277.124	32.7091740	-108.1220850	357	250	N		
5145-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621855.174	2634427.319	32.7091770	-108.1215960	1512	1058	N		
5146-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621855.458	2634577.114	32.7091790	-108.1211100	469	328	N		
5148-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621695.997	2630977.521	32.7087130	-108.1328110	1888	1322	N		
5149-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621696.374	2631127.532	32.7087150	-108.1323230	1068	748	N		
5164-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621702.295	2633377.512	32.7087490	-108.1250080	1025	718	N		
5165-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621702.683	2633527.523	32.7087510	-108.1245210	666	466	N		
5166-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621703.072	2633677.503	32.7087530	-108.1240330	323	226	N		
5167-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621703.498	2633827.514	32.7087560	-108.1235450	738	517	N		
5168-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621703.888	2633977.494	32.7087580	-108.1230580	283	198	N		
5169-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621704.279	2634127.505	32.7087600	-108.1225700	163	114	N		
5170-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621704.671	2634277.515	32.7087620	-108.1220820	1511	1058	N		
5171-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621705.063	2634427.495	32.7087640	-108.1215950	865	606	N		
5172-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621705.456	2634577.506	32.7087670	-108.1211070	2160	1512	N		
5189-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621552.293	2633377.899	32.7083370	-108.1250060	691	484	N		
5190-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621552.681	2633527.911	32.7083390	-108.1245180	1277	894	N		
5191-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621553.106	2633677.891	32.7083410	-108.1240300	939	657	N		
5192-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621553.495	2633827.903	32.7083430	-108.1235430	230	161	N		
5193-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621553.885	2633977.914	32.7083450	-108.1230550	92	64	N		
5194-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621554.276	2634127.895	32.7083480	-108.1225670	448	314	N		
5195-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621554.668	2634277.907	32.7083500	-108.1220800	863	604	N		
5196-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621555.060	2634427.887	32.7083520	-108.1215920	1940	1358	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
5197-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621555.453	2634577.899	32.7083540	-108.1211040	670	469	N		
5214-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621402.290	2633378.286	32.7079240	-108.1250030	1612	1128	N		
5215-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621402.678	2633528.298	32.7079260	-108.1245150	1667	1167	N		
5216-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621403.103	2633678.311	32.7079290	-108.1240280	754	528	N		
5217-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621403.493	2633828.292	32.7079310	-108.1235400	404	283	N		
5218-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621403.883	2633978.304	32.7079330	-108.1230520	395	277	N		
5219-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621404.274	2634128.286	32.7079350	-108.1225650	988	692	N		
5220-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621404.665	2634278.298	32.7079370	-108.1220770	1796	1257	N		
5221-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621405.058	2634428.310	32.7079400	-108.1215890	554	388	N		
5222-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621405.451	2634578.291	32.7079420	-108.1211020	1895	1327	N		
5242-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621252.712	2633528.686	32.7075140	-108.1245130	226	158	N		
5243-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621253.101	2633678.699	32.7075160	-108.1240250	104	73	N		
5244-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621253.490	2633828.681	32.7075190	-108.1235370	155	109	N		
5245-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621253.880	2633978.694	32.7075210	-108.1230500	713	499	N		
5246-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621254.271	2634128.707	32.7075230	-108.1225620	881	617	N		
5247-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621254.663	2634278.689	32.7075250	-108.1220740	333	233	N		
5248-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621255.055	2634428.702	32.7075270	-108.1215870	763	534	N		
5249-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621255.448	2634578.684	32.7075300	-108.1210990	4358	3051	N	Removed*	Bedrock
5250-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621255.842	2634728.697	32.7075320	-108.1206110	21824	15277	N	Removed*	Bedrock
5251-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621256.236	2634878.679	32.7075340	-108.1201240	15604	10923	N	Removed*	Bedrock
5256-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621103.488	2633829.101	32.7071060	-108.1235350	1317	922	N		
5257-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621103.878	2633979.084	32.7071080	-108.1230470	2426	1698	N		
5258-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621104.269	2634129.098	32.7071110	-108.1225590	293	205	N		
5259-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621104.660	2634279.080	32.7071130	-108.1220720	484	339	N		
5260-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621105.053	2634429.094	32.7071150	-108.1215840	694	486	N		
5261-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621105.446	2634579.077	32.7071170	-108.1210960	1942	1359	N		
5262-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621105.839	2634729.090	32.7071190	-108.1206090	928	650	N		
5263-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621106.234	2634879.073	32.7071220	-108.1201210	980	686	N		
5268-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620953.485	2633829.490	32.7066940	-108.1235320	1652	1156	N		
5270-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620954.266	2634129.488	32.7066980	-108.1225570	1080	756	N		
5271-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620954.658	2634279.472	32.7067010	-108.1220690	739	517	N		
5272-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620955.050	2634429.486	32.7067030	-108.1215820	607	425	N		
5273-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620955.479	2634579.469	32.7067050	-108.1210940	1288	902	N		
5274-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620955.873	2634729.484	32.7067070	-108.1206060	1359	951	N		
5275-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620956.268	2634879.467	32.7067100	-108.1201190	2931	2052	N		
5276-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620956.663	2635029.481	32.7067120	-108.1196310	3997	2798	N	Removed*	Bedrock
5282-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620805.871	2634729.877	32.7062950	-108.1206040	1389	972	N		
5374-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621845.628	2630838.454	32.7091230	-108.1332640	1126	788	N		
5376-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622897.019	2632789.270	32.7120280	-108.1269310	1102	771	N		
5377-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623053.106	2633949.501	32.7124660	-108.1231610	137	96	N		
5378-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	622147.707	2634257.837	32.7099800	-108.1221500	398	279	N		
5379-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621994.033	2634404.136	32.7095580	-108.1216730	165	116	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
5380-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621102.807	2635002.623	32.7071130	-108.1197200	1588	1112	N		
5381-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620828.941	2634876.047	32.7063590	-108.1201290	1060	742	N		
6001-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623500.709	2632772.765	32.7136870	-108.1269910	1334	934	N		
6002-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623350.707	2632773.180	32.7132750	-108.1269880	337	236	N		
6383-NG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	623635.977	2632772.432	32.7140590	-108.1269930	368	258	N		
1001-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621252.046	2633228.538	32.7075100	-108.1254890	235	165	N		
1002-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621251.513	2633078.709	32.7075070	-108.1259760	110	77	N		
1003-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621251.127	2632928.696	32.7075050	-108.1264630	2908	2036	N		
1004-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621401.239	2632928.065	32.7079180	-108.1264670	200	140	N		
1005-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621400.671	2632778.452	32.7079150	-108.1269530	83	58	N		
1006-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621550.711	2632777.914	32.7083280	-108.1269560	685	480	N		
1007-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621550.986	2632928.048	32.7083290	-108.1264680	743	520	N		
1008-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621551.627	2633078.061	32.7083320	-108.1259800	883	618	N		
1009-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621401.516	2633078.292	32.7079200	-108.1259780	1796	1257	N		
1010-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621401.902	2633228.551	32.7079220	-108.1254900	947	663	N		
1011-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621502.707	2633218.340	32.7081990	-108.1255240	1942	1359	N		
1012-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621250.705	2632778.683	32.7075030	-108.1269510	1467	1027	N		
1013-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621250.102	2632628.854	32.7075000	-108.1274380	697	488	N		
1014-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621249.937	2632478.688	32.7074990	-108.1279260	1834	1284	N		
1015-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621249.553	2632328.705	32.7074960	-108.1284140	116	81	N		
1016-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621249.134	2632178.692	32.7074940	-108.1289020	116	81	N		
1017-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621248.716	2632028.710	32.7074920	-108.1293890	142	99	N		
1018-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621248.517	2631878.728	32.7074900	-108.1298770	163	114	N		
1019-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621247.954	2631728.715	32.7074870	-108.1303640	598	419	N		
1020-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621247.427	2631579.347	32.7074850	-108.1308500	1200	840	N		
1022-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621400.322	2632628.655	32.7079130	-108.1274400	134	94	N		
1023-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621399.939	2632478.305	32.7079110	-108.1279290	97	68	N		
1024-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621399.520	2632328.292	32.7079090	-108.1284170	240	168	N		
1025-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621549.522	2632327.910	32.7083210	-108.1284190	867	607	N		
1026-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621549.942	2632477.922	32.7083230	-108.1279320	346	242	N		
1027-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621550.326	2632627.903	32.7083250	-108.1274440	824	577	N		
1028-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621549.139	2632178.268	32.7083190	-108.1289060	674	472	N		
1029-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621548.648	2632027.948	32.7083160	-108.1293940	536	375	N		
1030-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621548.340	2631877.906	32.7083140	-108.1298820	1278	895	N		
1031-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621547.960	2631727.925	32.7083120	-108.1303700	624	437	N		
1032-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621547.507	2631577.975	32.7083100	-108.1308570	1616	1131	N		
1033-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621547.091	2631427.963	32.7083070	-108.1313450	829	580	N		
1034-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621397.161	2631428.341	32.7078950	-108.1313420	1029	720	N		
1035-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621397.613	2631578.415	32.7078980	-108.1308540	335	235	N		
1036-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621397.957	2631728.304	32.7079000	-108.1303670	203	142	N		
1037-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621398.447	2631878.194	32.7079020	-108.1298800	94	66	N		
1038-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621398.646	2632028.329	32.7079040	-108.1293920	119	83	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
1039-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621399.100	2632178.372	32.7079060	-108.1289040	756	529	N		
1040-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621247.013	2631428.965	32.7074820	-108.1313390	574	402	N		
1041-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621102.176	2633379.060	32.7070990	-108.1249980	1551	1086	N		
1042-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621101.897	2633229.077	32.7070970	-108.1254850	2438	1707	N		
1043-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621101.401	2633079.064	32.7070950	-108.1259730	927	649	N		
1055-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620952.173	2633379.570	32.7066870	-108.1249950	673	471	N		
1060-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621058.855	2631880.290	32.7069690	-108.1298700	2359	1651	N		
1061-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621055.165	2632028.754	32.7069600	-108.1293870	2047	1433	N		
1066-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621052.608	2632778.380	32.7069580	-108.1269500	113	79	N		
1070-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620596.329	2633377.607	32.7057090	-108.1249980	1461	1023	N		
5173-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621545.994	2630977.928	32.7083010	-108.1328080	2746	1922	N		
5174-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621546.372	2631127.909	32.7083030	-108.1323210	4793	3355	N		
5175-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621546.786	2631277.921	32.7083050	-108.1318330	1603	1122	N		
5199-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621396.369	2631128.316	32.7078910	-108.1323180	1723	1206	N		
5200-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621396.783	2631278.298	32.7078930	-108.1318300	2574	1802	N		
5228-SG		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621246.780	2631278.706	32.7074810	-108.1318270	1018	713	N		
29178		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620309.083	2630032.103	32.7048940	-108.1358720	8628	6039	N	Removed*	IRA
29179		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620144.861	2630043.385	32.7044420	-108.1358330	6062	4243	N	Removed*	IRA
29180		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619980.526	2630055.620	32.7039910	-108.1357920	3840	2688	N	Removed*	IRA
29181		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619816.933	2630050.355	32.7035410	-108.1358080	1353	947	N	Removed*	IRA
29182		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619653.228	2630046.012	32.7030910	-108.1358200	2134	1494	N	Removed*	IRA
29183		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619488.434	2630040.651	32.7026380	-108.1358360	1585	1110	N	Removed*	IRA
29184		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619324.805	2630035.386	32.7021880	-108.1358520	3772	2641	N	Removed*	IRA
29185		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619161.100	2630031.043	32.7017380	-108.1358640	3335	2335	N	Removed*	IRA
29186		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	618997.506	2630025.808	32.7012880	-108.1358800	7712	5399	N	Removed*	IRA
29187		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619002.221	2629865.217	32.7013000	-108.1364020	1926	1349	N		
29188		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619166.107	2629870.115	32.7017510	-108.1363880	1758	1231	N		
29189		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619171.014	2629706.234	32.7017630	-108.1369200	2052	1436	N		
29190		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619334.551	2629705.718	32.7022120	-108.1369240	6985	4890	N	Removed*	IRA
29191		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619339.771	2629547.253	32.7022250	-108.1374390	3540	2478	N		
29192		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619503.656	2629552.152	32.7026760	-108.1374240	3989	2792	N		
29193		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619667.542	2629557.052	32.7031270	-108.1374100	4509	3156	N		
29194		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619672.049	2629406.277	32.7031380	-108.1379000	4425	3098	N		
29195		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619831.391	2629561.951	32.7035770	-108.1373960	3977	2784	N		
29196		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619990.272	2629725.959	32.7040150	-108.1368640	8377	5864	N	Removed*	IRA
29197		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619826.643	2629720.692	32.7035650	-108.1368800	1900	1330	N	Removed*	IRA
29198		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619663.049	2629715.456	32.7031150	-108.1368950	7462	5223	N	Removed*	IRA
29199		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619498.144	2629710.985	32.7026620	-108.1369080	7500	5250	N	Removed*	IRA
29200		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619329.677	2629870.552	32.7022000	-108.1363880	4178	2925	N	Removed*	IRA
29201		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619493.307	2629875.818	32.7026500	-108.1363720	6403	4482	N	Removed*	IRA
29202		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619658.101	2629881.180	32.7031030	-108.1363560	6826	4778	N	Removed*	IRA
29203		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619821.806	2629885.524	32.7035530	-108.1363440	7434	5204	N	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration: To Compare to HH Pre-FS RAC (250 µm sieve)	Copper Concentration: For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
29204		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	619985.399	2629890.790	32.7040030	-108.1363280	5646	3953	N	Removed*	IRA
29221		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621373.790	2629982.020	32.7078200	-108.1360440	3552	2486	N		
29222		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621294.879	2629981.856	32.7076030	-108.1360440	6701	4691	N	Removed*	IRA
29223		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621131.664	2629984.036	32.7071540	-108.1360360	2379	1665	N	Removed*	IRA
29224		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620967.067	2629998.976	32.7067020	-108.1359850	8174	5722	N	Removed*	IRA
29225		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620801.943	2630007.425	32.7062480	-108.1359560	7557	5290	N	Removed*	IRA
29226		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620637.865	2630019.045	32.7057970	-108.1359170	1999	1400	N		
29228		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620149.104	2629895.133	32.7044530	-108.1363150	9813	6869	N	Removed*	IRA
29229		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620313.897	2629900.526	32.7049060	-108.1362990	6472	4530	N	Removed*	IRA
29230		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620477.117	2629909.266	32.7053540	-108.1362730	4378	3065	N		
29231		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620641.002	2629914.164	32.7058050	-108.1362580	4311	3018	N		
29232		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620804.937	2629914.448	32.7062560	-108.1362590	6505	4553	N	Removed*	IRA
29233		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620968.531	2629919.683	32.7067050	-108.1362430	7280	5096	N	Removed*	IRA
29234		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621133.436	2629924.183	32.7071590	-108.1362300	3475	2432	N	Removed*	IRA
29235		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621296.508	2629933.785	32.7076070	-108.1362000	4989	3492	N		
29237		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620154.253	2629735.595	32.7044660	-108.1368340	4718	3302	N		
29238		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620318.139	2629740.494	32.7049160	-108.1368200	2834	1984	N		
29239		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620482.024	2629745.392	32.7053670	-108.1368050	4791	3354	N		
29240		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620645.873	2629750.290	32.7058170	-108.1367910	4044	2831	N		
29242		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	620973.644	2629760.087	32.7067180	-108.1367620	2697	1888	N		
29243		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621137.529	2629764.985	32.7071690	-108.1367480	2735	1914	N		
29244		Golf Course Interim Removal Action, Arcadis 2009	2008	0-2"	0.25 sieve	621301.379	2629769.884	32.7076190	-108.1367330	4002	2802	N		
RR001		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617981.035	2630116.794	32.6984950	-108.1355750	2,282	1597	N		
RR004		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618115.536	2630117.547	32.6988650	-108.1355740	2,366	1656	N		
RR005		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618112.973	2629982.956	32.6988570	-108.1360110	2,076	1453	N		
RR006		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618246.990	2630000.103	32.6992250	-108.1359570	2,156	1509	N		
RR007		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618246.808	2630114.906	32.6992260	-108.1355830	1,078	755	N		
RR008		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618245.917	2630364.198	32.6992250	-108.1347730	3,329	2330	N		
RR009		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618377.344	2630358.266	32.6995870	-108.1347930	3,777	2644	N		
RR010		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618378.035	2630115.557	32.6995870	-108.1355820	1,741	1219	N		
RR011		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618509.225	2630116.177	32.6999470	-108.1355820	1,531	1072	N		
RR012		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618511.207	2630378.672	32.6999550	-108.1347280	2,839	1987	N		
RR014		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618640.416	2630116.828	32.7003080	-108.1355810	1,476	1033	N		
RR017		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617586.703	2630908.729	32.6974180	-108.1329970	544	381	N		
RR018		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617717.894	2630909.376	32.6977780	-108.1329960	1,135	795	N		
RR019		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617718.638	2630774.885	32.6977790	-108.1334330	1,407	985	N		
RR020		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617849.828	2630775.533	32.6981400	-108.1334320	1,008	706	N		
RR021		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617849.202	2630906.733	32.6981390	-108.1330060	1,413	989	N		
RR022		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617981.018	2630776.181	32.6985000	-108.1334310	140	98	N		
RR024		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618115.519	2630776.900	32.6988700	-108.1334300	364	255	N		
RR025		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618114.857	2630908.098	32.6988690	-108.1330040	387	271	N		
RR026		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618246.709	2630777.548	32.6992310	-108.1334290	220	154	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
RR027		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618377.678	2630676.497	32.6995900	-108.1337590	237	166	N		
RR028		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618509.269	2630664.012	32.6999510	-108.1338010	311	218	N		
RR029		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618640.742	2630654.817	32.7003130	-108.1338320	470	329	N		
RR030		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618775.526	2630645.725	32.7006830	-108.1338630	1,101	771	N		
RR031		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618896.976	2630642.808	32.7010170	-108.1338730	272	190	N		
RR032		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618906.090	2630777.568	32.7010430	-108.1334350	1,211	848	N		
RR033		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618112.947	2631081.929	32.6988650	-108.1324390	377	264	N		
RR034		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618244.456	2631072.733	32.6992270	-108.1324700	991	694	N		
RR035		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618379.322	2631060.347	32.6995970	-108.1325110	5,623	3936	N	Removed*	RR Depot
RR037		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618510.452	2631172.536	32.6999590	-108.1321480	1,148	804	N		
RR038		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618641.642	2631173.183	32.7003190	-108.1321470	4,338	3037	N		
RR040		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618772.951	2631170.538	32.7006800	-108.1321560	1,616	1131	N		
RR041		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618775.483	2631305.095	32.7006880	-108.1317190	6,041	4229	N	Removed*	RR Depot
RR042		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618906.673	2631305.741	32.7010490	-108.1317180	3,290	2303	N		
RR043		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618907.416	2631171.255	32.7010500	-108.1321550	2,351	1646	N		
RR044		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619036.879	2630791.320	32.7014030	-108.1333920	326	228	N		
RR069		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619435.606	2631170.652	32.7025020	-108.1321620	301	211	N		
RR070		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619566.054	2631305.782	32.7028610	-108.1317240	1,916	1341	N		
RR071		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619566.796	2631171.298	32.7028620	-108.1321610	163	114	N		
RR072		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619567.421	2631040.106	32.7028630	-108.1325880	189	132	N		
RR073		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619698.046	2631280.191	32.7032240	-108.1318090	1,227	859	N		
RR074		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619697.987	2631171.945	32.7032230	-108.1321600	187	131	N		
RR075		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619698.648	2631040.722	32.7032240	-108.1325870	364	255	N		
RR076		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619829.177	2631172.560	32.7035830	-108.1321600	278	195	N		
RR077		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619829.838	2631041.369	32.7035840	-108.1325860	311	218	N		
RR078		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619960.404	2631173.207	32.7039440	-108.1321590	248	174	N		
RR079		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619961.147	2631038.725	32.7039450	-108.1325960	290	203	N		
RR080		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619961.171	2630927.219	32.7039440	-108.1329580	276	193	N		
RR081		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620094.950	2631170.664	32.7043140	-108.1321680	1,321	925	N		
RR082		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620092.337	2631039.372	32.7043060	-108.1325950	222	155	N		
RR083		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620092.762	2630914.733	32.7043060	-108.1330000	721	505	N		
RR084		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620226.177	2631171.311	32.7046750	-108.1321670	1,074	752	N		
RR085		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620226.802	2631040.121	32.7046750	-108.1325940	682	477	N		
RR086		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620227.463	2630908.931	32.7046760	-108.1330200	579	405	N		
RR087		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620357.368	2631171.957	32.7050350	-108.1321660	1,090	763	N		
RR088		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620357.992	2631040.768	32.7050360	-108.1325930	399	279	N		
RR089		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620357.488	2630948.887	32.7050340	-108.1328920	317	222	N		
RR090		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620489.219	2631041.384	32.7053970	-108.1325920	310	217	N		
RR091		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620489.361	2630926.589	32.7053960	-108.1329650	297	208	N		
RR092		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620620.491	2631038.771	32.7057570	-108.1326020	927	649	N		
RR093		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620620.670	2630923.946	32.7057570	-108.1329750	456	319	N		
RR094		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620754.992	2631039.489	32.7061270	-108.1326010	384	269	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
RR095		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620752.344	2630908.200	32.7061190	-108.1330270	312	218	N		
RR096		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620886.183	2631040.136	32.7064880	-108.1326000	1,014	710	N		
RR097		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620886.808	2630908.949	32.7064880	-108.1330260	168	118	N		
RR098		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621017.998	2630909.597	32.7068490	-108.1330250	435	305	N		
RR099		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621149.307	2630906.953	32.7072100	-108.1330350	223	156	N		
RR100		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621280.498	2630907.601	32.7075710	-108.1330340	1,452	1016	N		
RR101		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621313.336	2630797.023	32.7076600	-108.1333940	265	186	N		
RR102		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621415.224	2630790.237	32.7079400	-108.1334170	366	256	N		
RR103		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621546.815	2630777.783	32.7083010	-108.1334590	575	403	N		
RR104		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621151.213	2631172.718	32.7072170	-108.1321710	625	438	N		
RR105		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621151.473	2631054.634	32.7072170	-108.1325550	253	177	N		
RR106		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621283.147	2631038.888	32.7075790	-108.1326080	1,221	855	N		
RR113		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620491.235	2629985.160	32.7053940	-108.1360260	3,557	2490	N		
RR114		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620754.400	2629851.954	32.7061160	-108.1364610	1,804	1263	N		
RR115		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620755.030	2629720.766	32.7061170	-108.1368880	2,490	1743	N		
RR116		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620886.220	2629721.388	32.7064770	-108.1368870	1,752	1226	N		
RR117		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620886.969	2629586.940	32.7064790	-108.1373240	3,156	2209	N		
RR118		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621281.870	2629874.285	32.7075660	-108.1363940	359	251	N		
RR119		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621413.316	2629976.627	32.7079280	-108.1360620	3,410	2387	N		
RR120		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621413.745	2629851.993	32.7079290	-108.1364670	2,626	1838	N		
RR121		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621544.306	2629983.829	32.7082880	-108.1360400	1,845	1292	N		
RR122		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621414.411	2629720.777	32.7079290	-108.1368940	2,263	1584	N		
RR123		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621415.042	2629589.592	32.7079300	-108.1373210	1,520	1064	N		
RR124		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621490.164	2629490.149	32.7081360	-108.1376440	1,845	1292	N		
RR125		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621565.221	2630381.385	32.7083490	-108.1347480	973	681	N		
RR126		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621590.822	2630513.382	32.7084200	-108.1343190	1,235	865	N		
RR127		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621679.095	2630522.583	32.7086630	-108.1342900	314	220	N		
RR128		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621678.267	2630660.318	32.7086620	-108.1338420	676	473	N		
RR129		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621678.124	2630775.140	32.7086620	-108.1334690	1,297	908	N		
RR130		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621809.314	2630775.788	32.7090230	-108.1334680	1,927	1349	N		
RR131		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621809.658	2630654.416	32.7090230	-108.1338620	191	134	N		
RR132		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621810.604	2630513.391	32.7090240	-108.1343210	529	370	N		
RR133		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621941.913	2630510.749	32.7093850	-108.1343310	381	267	N		
RR134		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621941.168	2630645.223	32.7093840	-108.1338930	117	82	N		
RR135		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622072.477	2630642.581	32.7097450	-108.1339030	168	118	N		
RR136		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622073.505	2630498.266	32.7097470	-108.1343720	343	240	N		
RR137		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622205.297	2630479.262	32.7101090	-108.1344350	542	379	N		
RR138		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622206.941	2630643.331	32.7101150	-108.1339020	375	263	N		
RR139		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622111.139	2630774.951	32.7098530	-108.1334730	555	389	N		
RR140		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622206.197	2630777.804	32.7101140	-108.1334650	249	174	N		
RR141		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622337.506	2630775.161	32.7104750	-108.1334750	1,646	1152	N		
RR142		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622339.556	2630706.330	32.7104800	-108.1336980	1,084	759	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	**Alternate ID**		**Year Collected**	**Original Soil depth**	**Sieving Status**	**Northing (State Plane)**	**Easting (State Plane)**	**Latitude**	**Longitude**	**To Compare to HH Pre-FS RAC (250 µm sieve)**	**For Bird Pre-FS RAC Analysis (2000 µm sieve)**	**Pre-IRA Dataset**	**Removed in Post-IRA Dataset**	
RR143		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622337.465	2631434.521	32.7104800	-108.1313310	2,378	1665	N		
RR144		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622468.655	2631435.167	32.7108400	-108.1313300	1,611	1128	N		
RR145		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622471.188	2631569.740	32.7108480	-108.1308930	2,959	2071	N		
RR146		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622602.497	2631567.094	32.7112090	-108.1309020	2,890	2023	N		
RR147		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622603.156	2631435.914	32.7112100	-108.1313290	2,066	1446	N		
RR148		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622734.347	2631436.559	32.7115710	-108.1313280	2,913	2039	N		
RR149		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622733.687	2631567.739	32.7115700	-108.1309010	4,883	3418	N		
RR150		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622733.065	2631698.950	32.7115690	-108.1304750	2,493	1745	N		
RR151		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622864.914	2631568.384	32.7119310	-108.1309000	2,904	2033	N		
RR152		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622865.537	2631437.205	32.7119310	-108.1313270	2,770	1939	N		
RR153		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622866.480	2631296.154	32.7119330	-108.1317860	990	693	N		
RR154		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622997.470	2631303.350	32.7122930	-108.1317630	840	588	N		
RR155		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622996.846	2631434.560	32.7122920	-108.1313370	3,272	2290	N		
RR156		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622999.379	2631569.131	32.7123000	-108.1308990	3,496	2447	N		
RR157		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	623128.661	2631303.997	32.7126540	-108.1317620	1,860	1302	N		
RR158		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622469.084	2633944.705	32.7108610	-108.1231710	3,306	2314	N		
RR165		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622864.704	2634209.133	32.7119500	-108.1223150	916	641	N		
RR166		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618774.859	2631436.291	32.7006880	-108.1312930	2,872	2010	N		
RR167		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618774.200	2631567.517	32.7006870	-108.1308660	1,620	1134	N		
RR168		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618793.222	2631699.291	32.7007400	-108.1304380	1,046	732	N		
RR169		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618805.696	2631830.892	32.7007750	-108.1300100	1,893	1325	N		
RR170		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618801.682	2631965.247	32.7007650	-108.1295730	2,657	1860	N		
RR171		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618904.768	2631699.357	32.7010470	-108.1304390	3,061	2143	N		
RR172		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618905.427	2631568.132	32.7010470	-108.1308650	2,125	1488	N		
RR173		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618905.449	2631456.622	32.7010470	-108.1312280	2,573	1801	N		
RR174		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618337.546	2631141.102	32.6994830	-108.1322480	1,277	894	N		
RR175		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618535.315	2631219.210	32.7000270	-108.1319960	1,196	837	N		
RR176		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618758.712	2631317.722	32.7006420	-108.1316780	1,826	1278	N		
RR250		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616792.859	2630907.963	32.6952360	-108.1329920	1,791	1254	N		
RR251		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616927.323	2630908.712	32.6956050	-108.1329910	905	634	N		
RR252		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616924.675	2630777.407	32.6955970	-108.1334170	1,729	1210	N		
RR253		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616925.419	2630642.943	32.6955980	-108.1338550	1,481	1037	N		
RR254		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616905.096	2630445.509	32.6955400	-108.1344960	1,675	1173	N		
RR255		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617059.054	2631001.219	32.6959680	-108.1326910	644	451	N		
RR256		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617058.111	2631142.265	32.6959660	-108.1322330	2,489	1742	N		
RR257		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617189.820	2631126.516	32.6963280	-108.1322850	3,992	2794	N		
RR257-Ea		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617189.538	2631136.329	32.6963280	-108.1322530	3,340	2338	N	Removed*	Use mean of 4 samples
RR257-Nb		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617199.642	2631126.790	32.6963550	-108.1322840	5,442	3809	N	Removed*	Use mean of 4 samples
RR257-Sc		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617179.998	2631126.212	32.6963010	-108.1322860	1,839	1287	N	Removed*	Use mean of 4 samples
RR257-Wd		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617190.103	2631116.673	32.6963290	-108.1323170	3,813	2669	N	Removed*	Use mean of 4 samples
RR257 (mean)		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617189.820	2631126.516	32.6963280	-108.1322850	3,608	2526	N	RR257	mean of Ea, Nb, Sc and Wd

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
RR258		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617190.645	2630988.762	32.6963300	-108.1327330	2,447	1713	N		
RR259		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617322.355	2630973.014	32.6966920	-108.1327850	1,474	1032	N		
RR260		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617321.293	2631117.320	32.6966900	-108.1323160	1,206	844	N		
RR261		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617507.934	2630909.644	32.6972010	-108.1329930	1,074	752	N		
RR262		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	617587.329	2630777.528	32.6974180	-108.1334230	2,315	1621	N		
RR264		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622338.476	2630522.610	32.7104760	-108.1342960	441	309	N		
RR265		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622471.229	2630690.586	32.7108420	-108.1337510	661	463	N		
RR266		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622469.986	2630513.417	32.7108370	-108.1343270	2,092	1464	N		
RR267		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622339.423	2630381.556	32.7104770	-108.1347540	963	674	N		
RR268		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622468.696	2630775.809	32.7108350	-108.1334740	3,035	2125	N		
RR269		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622602.538	2630687.944	32.7112030	-108.1337610	1,067	747	N		
RR270		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619298.833	2631356.831	32.7021270	-108.1315560	856	599	N		
RR271		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619430.706	2631334.531	32.7024890	-108.1316290	968	678	N		
RR272		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619826.845	2631251.239	32.7035780	-108.1319040	1,721	1205	N		
RR273		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	619958.719	2631228.940	32.7039400	-108.1319780	941	659	N		
RR274		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620090.711	2631203.350	32.7043020	-108.1320620	1,450	1015	N		
RR275		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620222.384	2631187.603	32.7046640	-108.1321140	1,232	862	N		
RR276		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620486.368	2631136.455	32.7053900	-108.1322830	501	351	N		
RR277		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620618.642	2631101.024	32.7057530	-108.1323990	2,089	1462	N		
RR278		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620750.835	2631068.914	32.7061160	-108.1325050	369	258	N		
RR279		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621012.192	2630994.691	32.7068340	-108.1327490	610	427	N		
RR280		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621151.215	2630952.944	32.7072150	-108.1328860	369	258	N		
RR281		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622603.161	2630776.528	32.7112050	-108.1334730	2,637	1846	N		
RR282		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622733.729	2630688.593	32.7115630	-108.1337600	441	309	N		
RR283		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622601.258	2630510.776	32.7111980	-108.1343370	2,135	1495	N		
RR284		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622470.732	2630378.915	32.7108380	-108.1347640	1,278	895	N		
RR285		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622336.895	2630246.982	32.7104690	-108.1351920	390	273	N		
RR286		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621408.615	2630901.565	32.7079230	-108.1330550	1,127	789	N		
RR287		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621541.290	2630853.065	32.7082870	-108.1332140	682	477	N		
RR288		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621673.565	2630817.636	32.7086500	-108.1333300	1,248	874	N		
RR289		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621938.115	2630746.809	32.7093770	-108.1335630	889	622	N		
RR290		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622073.782	2630708.223	32.7097490	-108.1336900	1,249	874	N		
RR291		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622199.509	2630672.623	32.7100950	-108.1338070	711	498	N		
RR292		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622332.067	2630627.384	32.7104590	-108.1339550	384	269	N		
RR293		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622470.124	2630618.394	32.7108380	-108.1339850	772	540	N		
RR294		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622608.264	2630606.114	32.7112180	-108.1340270	991	694	N		
RR295		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621943.096	2630799.451	32.7093910	-108.1333920	518	363	N		
RR296		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621810.739	2630838.140	32.7090270	-108.1332650	259	181	N		
RR297		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621677.380	2630909.615	32.7086610	-108.1330310	969	678	N		
RR298		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621653.800	2631040.119	32.7085980	-108.1326070	420	294	N		
RR299		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621545.388	2630935.202	32.7082990	-108.1329470	734	514	N		
RR300		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621412.430	2630993.545	32.7079340	-108.1327560	564	395	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration To Compare to HH Pre-FS RAC (250 µm sieve)	Copper Concentration For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
RR301		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622734.351	2630777.177	32.7115660	-108.1334720	384	269	N		
RR302		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622868.194	2630689.343	32.7119330	-108.1337580	1,432	1002	N		
RR303		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622735.096	2630642.706	32.7115670	-108.1339090	1,934	1354	N		
RR304		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622735.096	2630642.706	32.7115670	-108.1339090	262	183	N		
RR305		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622865.660	2630774.534	32.7119260	-108.1334820	2,921	2045	N		
RR306		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622602.535	2630907.739	32.7112040	-108.1330460	979	685	N		
RR307		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622733.100	2631039.567	32.7115640	-108.1326190	1,149	804	N		
RR308		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622864.916	2630909.035	32.7119250	-108.1330440	2,868	2008	N		
RR309		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622400.829	2631400.343	32.7106540	-108.1314430	379	265	N		
RR310		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622398.461	2631478.984	32.7106480	-108.1311870	505	354	N		
RR311		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622385.989	2631567.194	32.7106140	-108.1309000	563	394	N		
RR312		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622426.740	2631630.731	32.7107270	-108.1306940	337	236	N		
RR313		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622521.279	2631649.974	32.7109870	-108.1306320	785	550	N		
RR314		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622545.800	2631598.216	32.7110540	-108.1308010	432	302	N		
RR315		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622587.315	2631635.549	32.7111680	-108.1306800	523	366	N		
RR316		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622075.489	2630760.763	32.7097550	-108.1335190	147	103	N		
RR317		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622204.490	2630725.264	32.7101090	-108.1336360	117	82	N		
29123_2013		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618493.469	2630424.087	32.6999060	-108.1345800	985	690	N		
29309		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616830.497	2631184.661	32.6953410	-108.1320930	2,468	1728	N	Removed*	IRA
29310		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616812.643	2631013.536	32.6952910	-108.1326490	2,715	1901	N	Removed*	IRA
29311		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616781.494	2630848.588	32.6952040	-108.1331850	518	363	N	Removed*	IRA
29312		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616766.715	2630684.116	32.6951620	-108.1337190	592	414	N	Removed*	IRA
29313		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616801.121	2630521.138	32.6952550	-108.1342490	857	600	N	Removed*	IRA
29314		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616655.092	2630467.564	32.6948540	-108.1344220	652	456	N	Removed*	IRA
29315		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616650.225	2630631.427	32.6948410	-108.1338890	408	286	N	Removed*	IRA
29316		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616645.322	2630795.321	32.6948290	-108.1333570	209	146	N	Removed*	IRA
29317		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616640.421	2630959.184	32.6948170	-108.1328240	2,060	1442	N	Removed*	IRA
29318		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616635.238	2631132.890	32.6948040	-108.1322590	2,563	1794	N	Removed*	IRA
29319		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616469.185	2631200.102	32.6943480	-108.1320390	3,569	2498	N	Removed*	IRA
29320		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616305.135	2631201.763	32.6938970	-108.1320320	3,780	2646	N	Removed*	IRA
29321		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616140.449	2631223.080	32.6934450	-108.1319620	2,641	1849	N	Removed*	IRA
29322		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615976.281	2631228.032	32.6929940	-108.1319440	1,540	1078	N	Removed*	IRA
29323		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615811.749	2631246.058	32.6925410	-108.1318840	1,529	1070	N	Removed*	IRA
29324		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615647.181	2631264.115	32.6920890	-108.1318240	3,605	2524	N	Removed*	IRA
29325		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615483.013	2631269.068	32.6916380	-108.1318060	2,088	1462	N	Removed*	IRA
29326		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615318.445	2631287.094	32.6911860	-108.1317460	2,648	1854	N	Removed*	IRA
29327		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615153.877	2631305.152	32.6907340	-108.1316860	2,306	1614	N	Removed*	IRA
29328		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615323.545	2631116.673	32.6911990	-108.1323000	1,330	931	N	Removed*	IRA
29329		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615487.394	2631121.564	32.6916490	-108.1322860	2,432	1702	N	Removed*	IRA
29330		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615652.163	2631096.956	32.6921020	-108.1323670	1,984	1389	N	Removed*	IRA
29331		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615816.649	2631082.191	32.6925540	-108.1324170	1,120	784	N	Removed*	IRA
29332		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615980.899	2631073.979	32.6930050	-108.1324450	1,571	1100	N	Removed*	IRA

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration: To Compare to HH Pre-FS RAC (250 µm sieve)	Copper Concentration: For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
29333		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616145.349	2631059.214	32.6934570	-108.1324940	1,971	1380	N	Removed*	IRA
29334		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616309.717	2631047.711	32.6939090	-108.1325330	964	675	N	Removed*	IRA
29335		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616474.085	2631036.238	32.6943600	-108.1325720	2,449	1714	N	Removed*	IRA
29336		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615325.996	2631034.722	32.6912050	-108.1325660	2,025	1418	N	Removed*	IRA
29337		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615493.780	2630908.538	32.6916650	-108.1329780	1,017	712	N	Removed*	IRA
29338		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615657.665	2630913.431	32.6921150	-108.1329640	550	385	N	Removed*	IRA
29339		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615821.514	2630918.324	32.6925660	-108.1329490	1,572	1100	N	Removed*	IRA
29340		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615985.399	2630923.217	32.6930160	-108.1329350	1,943	1360	N	Removed*	IRA
29341		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616150.250	2630895.349	32.6934690	-108.1330270	2,965	2076	N	Removed*	IRA
29342		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616314.618	2630883.846	32.6939210	-108.1330660	424	297	N	Removed*	IRA
29343		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616479.105	2630869.083	32.6943730	-108.1331150	427	299	N	Removed*	IRA
29344		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616483.888	2630708.480	32.6943850	-108.1336380	333	233	N	Removed*	IRA
29345		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616488.791	2630544.617	32.6943970	-108.1341700	533	373	N	Removed*	IRA
29346		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616319.520	2630719.982	32.6939330	-108.1335990	359	251	N	Removed*	IRA
29347		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616324.423	2630556.087	32.6939450	-108.1341310	508	356	N	Removed*	IRA
29348		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616155.152	2630731.453	32.6934810	-108.1335600	486	340	N	Removed*	IRA
29349		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	616160.055	2630567.588	32.6934940	-108.1340920	1,493	1045	N	Removed*	IRA
29350		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615990.301	2630759.351	32.6930280	-108.1334680	1,191	834	N	Removed*	IRA
29351		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615995.204	2630595.454	32.6930410	-108.1340000	1,242	869	N	Removed*	IRA
29352		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615826.416	2630754.457	32.6925780	-108.1334820	2,685	1880	N	Removed*	IRA
29353		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	615662.366	2630756.116	32.6921270	-108.1334750	1,508	1056	N	Removed*	IRA
29034		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622809.526	2634244.230	32.7117990	-108.1222000	5,143	3600	N	Removed	Bedrock[3]
29219		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618496.085	2630335.593	32.6999130	-108.1348680	5,017	3512	N	Removed	Bedrock[4]
29220		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	618331.753	2630347.062	32.6994610	-108.1348290	5,231	3662	N	Removed	Bedrock[4]
29227		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620473.378	2630033.833	32.7053450	-108.1358680	5,841	4089	N	Removed	Bedrock[7]
29236		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621404.661	2629937.016	32.7079040	-108.1361910	5,138	3597	N		Bedrock[5]
29241		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	620809.759	2629755.189	32.7062680	-108.1367760	5,442	3809	N	Removed	Bedrock[6]
29245		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	621389.888	2629772.536	32.7078620	-108.1367250	5,278	3695	N		Bedrock[5]
29248		Railroad Interim Removal Action, Golder 2013	2012	0-2"	0.25 sieve	622489.927	2633905.977	32.7109180	-108.1232970	5,152	3606	N	Removed	Bedrock[3]
RR-012		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619442.081	2637954.089	32.7025700	-108.1101100	176	158	N		
RR-013		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619441.768	2638074.055	32.7025700	-108.1097200	50	45	N		
RR-014		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619441.456	2638194.021	32.7025700	-108.1093300	1235	1112	N		
RR-015		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619323.594	2637353.944	32.7022400	-108.1120600	123	111	N		
RR-016		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619323.279	2637473.910	32.7022400	-108.1116700	141	127	N		
RR-019		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619322.328	2637836.885	32.7022400	-108.1104900	390	351	N		
RR-020		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619322.015	2637956.852	32.7022400	-108.1101000	989	890	N		
RR-021		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619321.702	2638076.818	32.7022400	-108.1097100	61	55	N		
RR-023		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619202.898	2637596.638	32.7019100	-108.1112700	303	273	N		
RR-024		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619202.584	2637716.605	32.7019100	-108.1108800	1578	1420	N		
RR-026		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619201.957	2637956.538	32.7019100	-108.1101000	1265	1139	N		
RR-027		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619201.644	2638076.505	32.7019100	-108.1097100	465	419	N		
RR-029		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619082.525	2637716.291	32.7015800	-108.1108800	23	21	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration: To Compare to HH Pre-FS RAC (250 µm sieve)	Copper Concentration: For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
RR-030		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619082.212	2637836.258	32.7015800	-108.1104900	573	516	N		
RR-031		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619081.898	2637956.225	32.7015800	-108.1101000	16	14	N		
RR-032		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619081.585	2638076.192	32.7015800	-108.1097100	284	256	N		
RR-033		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619081.273	2638196.160	32.7015800	-108.1093200	1312	1181	N		
RR-035		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618962.467	2637715.976	32.7012500	-108.1108800	697	627	N		
RR-036		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618962.153	2637835.944	32.7012500	-108.1104900	108	97	N		
RR-037		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618961.840	2637955.912	32.7012500	-108.1101000	851	766	N		
RR-038		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618961.527	2638075.879	32.7012500	-108.1097100	590	531	N		
RR-041		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618842.409	2637715.662	32.7009200	-108.1108800	484	436	N		
RR-042		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618842.095	2637835.630	32.7009200	-108.1104900	79	71	N		
RR-043		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618841.782	2637955.598	32.7009200	-108.1101000	780	702	N		
RR-044		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618841.469	2638075.567	32.7009200	-108.1097100	660	594	N		
RR-045		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618841.156	2638195.535	32.7009200	-108.1093200	40	36	N		
RR-047		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618722.350	2637715.348	32.7005900	-108.1108800	50	45	N		
RR-048		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618722.037	2637835.317	32.7005900	-108.1104900	271	244	N		
RR-049		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618721.723	2637955.285	32.7005900	-108.1101000	39	35	N		
RR-050		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618721.411	2638075.254	32.7005900	-108.1097100	955	860	N		
RR-051		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618721.098	2638195.222	32.7005900	-108.1093200	761	685	N		
RR-053		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618601.978	2637835.003	32.7002600	-108.1104900	165	149	N		
RR-054		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618601.665	2637954.972	32.7002600	-108.1101000	367	330	N		
RR-055		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618601.352	2638074.941	32.7002600	-108.1097100	54	49	N		
RR-056		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618601.040	2638194.910	32.7002600	-108.1093200	982	884	N		
RR-058		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618481.920	2637834.689	32.6999300	-108.1104900	496	446	N		
RR-059		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618481.607	2637954.659	32.6999300	-108.1101000	842	758	N		
RR-060		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618481.294	2638074.628	32.6999300	-108.1097100	820	738	N		
RR-061		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618480.981	2638194.597	32.6999300	-108.1093200	707	636	N		
RR-063		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618361.862	2637834.375	32.6996000	-108.1104900	597	537	N		
RR-064		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618361.548	2637954.345	32.6996000	-108.1101000	1006	905	N		
RR-065		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618361.236	2638074.315	32.6996000	-108.1097100	1154	1039	N		
RR-066		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618360.923	2638194.285	32.6996000	-108.1093200	1479	1331	N		
RR-069		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618241.490	2637954.032	32.6992700	-108.1101000	369	332	N		
RR-070		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618241.177	2638074.002	32.6992700	-108.1097100	585	527	N		
RR-071		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618240.865	2638193.973	32.6992700	-108.1093200	97	87	N		
RR-072		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618240.553	2638313.943	32.6992700	-108.1089300	93	84	N		
RR-074		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618121.424	2637956.795	32.6989400	-108.1100900	363	327	N		
RR-075		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618121.111	2638076.766	32.6989400	-108.1097000	615	554	N		
RR-076		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618120.799	2638196.736	32.6989400	-108.1093100	1008	907	N		
RR-077		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618120.487	2638316.707	32.6989400	-108.1089200	63	57	N		
RR-079		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618001.366	2637956.481	32.6986100	-108.1100900	673	606	N		
RR-080		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618001.053	2638076.453	32.6986100	-108.1097000	473	426	N		
RR-081		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618000.740	2638196.424	32.6986100	-108.1093100	1330	1197	N		
RR-082		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618000.428	2638316.395	32.6986100	-108.1089200	416	374	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration To Compare to HH Pre-FS RAC (250 µm sieve)	Copper Concentration For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
RR-084		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617881.307	2637956.168	32.6982800	-108.1100900	79	71	N		
RR-085		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617880.994	2638076.140	32.6982800	-108.1097000	1319	1187	N		
RR-086		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617880.682	2638196.111	32.6982800	-108.1093100	89	80	N		
RR-087		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617880.370	2638316.083	32.6982800	-108.1089200	822	740	N		
RR-089		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617760.936	2638075.827	32.6979500	-108.1097000	273	246	N		
RR-090		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617760.624	2638195.799	32.6979500	-108.1093100	475	428	N		
RR-091		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617760.312	2638315.771	32.6979500	-108.1089200	427	384	N		
RR-092		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617763.638	2638435.753	32.6979600	-108.1085300	38	34	N		
RR-094		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617640.878	2638075.514	32.6976200	-108.1097000	298	268	N		
RR-095		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617640.566	2638195.487	32.6976200	-108.1093100	461	415	N		
RR-096		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617640.254	2638315.459	32.6976200	-108.1089200	558	502	N		
RR-097		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617643.580	2638435.441	32.6976300	-108.1085300	187	168	N		
RR-099		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617520.820	2638075.201	32.6972900	-108.1097000	366	329	N		
RR-100		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617520.507	2638195.174	32.6972900	-108.1093100	720	648	N		
RR-101		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617520.195	2638315.147	32.6972900	-108.1089200	183	165	N		
RR-102		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617523.522	2638435.130	32.6973000	-108.1085300	24	22	N		
RR-103		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617523.211	2638555.103	32.6973000	-108.1081400	527	474	N		
RR-104		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617400.761	2638074.888	32.6969600	-108.1097000	372	335	N		
RR-105		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617400.449	2638194.862	32.6969600	-108.1093100	374	337	N		
RR-106		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617400.137	2638314.835	32.6969600	-108.1089200	237	213	N		
RR-107		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617403.464	2638434.818	32.6969700	-108.1085300	514	463	N		
RR-108		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617403.153	2638554.792	32.6969700	-108.1081400	346	311	N		
RR-109		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617280.391	2638194.550	32.6966300	-108.1093100	302	272	N		
RR-110		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617283.717	2638314.533	32.6966400	-108.1089200	311	280	N		
RR-111		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617283.406	2638434.507	32.6966400	-108.1085300	538	484	N		
RR-112		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617283.094	2638554.480	32.6966400	-108.1081400	49	44	N		
RR-113		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617160.333	2638194.237	32.6963000	-108.1093100	222	200	N		
RR-114		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617163.659	2638314.221	32.6963100	-108.1089200	504	454	N		
RR-115		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617163.347	2638434.195	32.6963100	-108.1085300	986	887	N		
RR-116		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617163.036	2638554.169	32.6963100	-108.1081400	36	32	N		
RR-118		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617040.274	2638193.925	32.6959700	-108.1093100	219	197	N		
RR-119		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617043.601	2638313.909	32.6959800	-108.1089200	146	131	N		
RR-120		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617043.289	2638433.884	32.6959800	-108.1085300	577	519	N		
RR-121		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617042.978	2638553.858	32.6959800	-108.1081400	277	249	N		
RR-123		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616920.208	2638196.689	32.6956400	-108.1093000	375	338	N		
RR-124		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616923.534	2638316.673	32.6956500	-108.1089100	187	168	N		
RR-125		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616923.223	2638436.648	32.6956500	-108.1085200	426	383	N		
RR-126		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616922.912	2638556.624	32.6956500	-108.1081300	53	48	N		
RR-128		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616800.150	2638196.376	32.6953100	-108.1093000	227	204	N		
RR-129		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616803.476	2638316.361	32.6953200	-108.1089100	460	414	N		
RR-130		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616803.165	2638436.337	32.6953200	-108.1085200	497	447	N		
RR-131		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616802.854	2638556.313	32.6953200	-108.1081300	134	121	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
RR-132		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616802.543	2638676.288	32.6953200	-108.1077400	539	485	N		
RR-133		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616683.418	2638316.049	32.6949900	-108.1089100	38	34	N		
RR-134		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616683.106	2638436.025	32.6949900	-108.1085200	334	301	N		
RR-135		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616682.795	2638556.002	32.6949900	-108.1081300	558	502	N		
RR-136		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616682.485	2638675.978	32.6949900	-108.1077400	479	431	N		
RR-137		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616563.360	2638315.738	32.6946600	-108.1089100	313	282	N		
RR-138		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616563.048	2638435.714	32.6946600	-108.1085200	478	430	N		
RR-139		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616562.737	2638555.690	32.6946600	-108.1081300	25	23	N		
RR-140		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616562.427	2638675.667	32.6946600	-108.1077400	178	160	N		
RR-142		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616442.990	2638435.403	32.6943300	-108.1085200	407	366	N		
RR-143		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616442.679	2638555.379	32.6943300	-108.1081300	83	75	N		
RR-144		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616442.368	2638675.356	32.6943300	-108.1077400	207	186	N		
RR-147		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616322.932	2638435.091	32.6940000	-108.1085200	661	595	N		
RR-148		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616322.621	2638555.068	32.6940000	-108.1081300	292	263	N		
RR-149		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616322.310	2638675.046	32.6940000	-108.1077400	74	67	N		
RR-152		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616202.252	2638674.735	32.6936700	-108.1077400	228	205	N		
RR-156		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618363.435	2637234.526	32.6996000	-108.1124400	125	113	N	Removed*	Borrow
RR-157		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618363.119	2637354.496	32.6996000	-108.1120500	181	163	N	Removed*	Borrow
RR-158		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618240.371	2636994.260	32.6992600	-108.1132200	130	117	N	Removed*	Borrow
RR-159		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618243.692	2637114.240	32.6992700	-108.1128300	123	111	N	Removed*	Borrow
RR-160		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618243.377	2637234.210	32.6992700	-108.1124400	151	136	N	Removed*	Borrow
RR-161		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618243.061	2637354.180	32.6992700	-108.1120500	172	155	N	Removed*	Borrow
RR-162		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618242.746	2637474.151	32.6992700	-108.1116600	958	862	N	Removed*	Borrow
RR-163		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618120.947	2636754.001	32.6989300	-108.1140000	197	177	N	Removed*	Borrow
RR-164		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618120.312	2636993.943	32.6989300	-108.1132200	621	559	N	Removed*	Borrow
RR-165		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618123.634	2637113.923	32.6989400	-108.1128300	989	890	N	Removed*	Borrow
RR-166		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618123.318	2637233.894	32.6989400	-108.1124400	645	581	N	Removed*	Borrow
RR-167		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618123.003	2637353.865	32.6989400	-108.1120500	601	541	N	Removed*	Borrow
RR-168		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618122.688	2637473.836	32.6989400	-108.1116600	559	503	N	Removed*	Borrow
RR-169		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618000.880	2636756.760	32.6986000	-108.1139900	361	325	N	Removed*	Borrow
RR-170		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618000.246	2636996.702	32.6986000	-108.1132100	708	637	N	Removed*	Borrow
RR-171		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618003.568	2637116.683	32.6986100	-108.1128200	331	298	N	Removed*	Borrow
RR-172		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618003.252	2637236.654	32.6986100	-108.1124300	909	818	N	Removed*	Borrow
RR-173		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618002.936	2637356.625	32.6986100	-108.1120400	480	432	N	Removed*	Borrow
RR-174		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618002.621	2637476.597	32.6986100	-108.1116500	200	180	N	Removed*	Borrow
RR-175		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617881.140	2636636.470	32.6982700	-108.1143800	255	230	N	Removed*	Borrow
RR-176		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617880.822	2636756.442	32.6982700	-108.1139900	1889	1700	N	Removed*	Borrow
RR-177		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617880.188	2636996.385	32.6982700	-108.1132100	221	199	N	Removed*	Borrow
RR-178		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617883.510	2637116.367	32.6982800	-108.1128200	427	384	N	Removed*	Borrow
RR-179		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617883.194	2637236.338	32.6982800	-108.1124300	245	221	N	Removed*	Borrow
RR-180		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617882.878	2637356.310	32.6982800	-108.1120400	216	194	N	Removed*	Borrow
RR-181		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617882.563	2637476.282	32.6982800	-108.1116500	247	222	N	Removed*	Borrow

TABLE 3-2
Sample Summary for Total Copper

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Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
RR-182		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617761.081	2636636.152	32.6979400	-108.1143800	261	235	N	Removed*	Borrow
RR-183		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617760.764	2636756.124	32.6979400	-108.1139900	199	179	N	Removed*	Borrow
RR-184		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617763.451	2637116.050	32.6979500	-108.1128200	204	184	N	Removed*	Borrow
RR-185		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617763.135	2637236.022	32.6979500	-108.1124300	402	362	N	Removed*	Borrow
RR-186		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617762.820	2637355.994	32.6979500	-108.1120400	265	239	N	Removed*	Borrow
RR-187		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617762.505	2637475.967	32.6979500	-108.1116500	223	201	N	Removed*	Borrow
RR-188		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617641.660	2636395.889	32.6976100	-108.1151600	278	250	N	Removed*	Borrow
RR-189		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617641.341	2636515.862	32.6976100	-108.1147700	136	122	N	Removed*	Borrow
RR-190		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617641.023	2636635.834	32.6976100	-108.1143800	191	172	N	Removed*	Borrow
RR-191		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617640.705	2636755.807	32.6976100	-108.1139900	165	149	N	Removed*	Borrow
RR-192		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617642.447	2637475.652	32.6976200	-108.1116500	186	167	N	Removed*	Borrow
RR-193		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617521.283	2636515.543	32.6972800	-108.1147700	179	161	N	Removed*	Borrow
RR-194		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617520.965	2636635.516	32.6972800	-108.1143800	158	142	N	Removed*	Borrow
RR-195		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617520.647	2636755.489	32.6972800	-108.1139900	200	180	N	Removed*	Borrow
RR-196		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617522.388	2637475.336	32.6972900	-108.1116500	190	171	N	Removed*	Borrow
RR-197		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617401.225	2636515.224	32.6969500	-108.1147700	311	280	N	Removed*	Borrow
RR-198		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617400.906	2636635.198	32.6969500	-108.1143800	366	329	N	Removed*	Borrow
RR-199		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617400.589	2636755.171	32.6969500	-108.1139900	170	153	N	Removed*	Borrow
RR-200		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617402.015	2637594.995	32.6969600	-108.1112600	667	600	N	Removed*	Borrow
RR-201		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617281.166	2636514.906	32.6966200	-108.1147700	401	361	N	Removed*	Borrow
RR-202		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617280.848	2636634.880	32.6966200	-108.1143800	116	104	N	Removed*	Borrow
RR-203		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617280.530	2636754.854	32.6966200	-108.1139900	273	246	N	Removed*	Borrow
RR-204		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617281.957	2637594.680	32.6966300	-108.1112600	83	75	N	Removed*	Borrow
RR-205		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617161.108	2636514.587	32.6962900	-108.1147700	108	97	N	Removed*	Borrow
RR-206		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617160.790	2636634.562	32.6962900	-108.1143800	176	158	N	Removed*	Borrow
RR-207		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617160.472	2636754.536	32.6962900	-108.1139900	244	220	N	Removed*	Borrow
RR-208		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617161.899	2637594.366	32.6963000	-108.1112600	333	300	N	Removed*	Borrow
RR-209		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617040.732	2636634.243	32.6959600	-108.1143800	600	540	N	Removed*	Borrow
RR-210		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617040.414	2636754.218	32.6959600	-108.1139900	121	109	N	Removed*	Borrow
RR-211		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616920.673	2636633.925	32.6956300	-108.1143800	1063	957	N	Removed*	Borrow
RR-212		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616920.356	2636753.901	32.6956300	-108.1139900	544	490	N	Removed*	Borrow
RR-213		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616800.607	2636636.684	32.6953000	-108.1143700	2371	2134	N	Removed*	Borrow
RR-214		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616800.289	2636756.659	32.6953000	-108.1139800	511	460	N	Removed*	Borrow
RR-215		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616680.231	2636756.341	32.6949700	-108.1139800	163	147	N	Removed*	Borrow
RR-216		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616683.552	2636876.327	32.6949800	-108.1135900	85	77	N	Removed*	Borrow
RR-217		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616560.173	2636756.024	32.6946400	-108.1139800	323	291	N	Removed*	Borrow
RR-218		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616563.494	2636876.010	32.6946500	-108.1135900	63	57	N	Removed*	Borrow
RR-219		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616561.286	2637715.846	32.6946500	-108.1108600	149	134	N	Removed*	Borrow
RR-220		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616440.115	2636755.706	32.6943100	-108.1139800	168	151	N	Removed*	Borrow
RR-221		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616443.436	2636875.693	32.6943200	-108.1135900	158	142	N	Removed*	Borrow
RR-222		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616323.695	2636755.398	32.6939900	-108.1139800	158	142	N	Removed*	Borrow
RR-223		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616323.377	2636875.376	32.6939900	-108.1135900	939	845	N	Removed*	Borrow

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	**Alternate ID**		**Year Collected**	**Original Soil depth**	**Sieving Status**	**Northing (State Plane)**	**Easting (State Plane)**	**Latitude**	**Longitude**	**To Compare to HH Pre-FS RAC (250 µm sieve)**	**For Bird Pre-FS RAC Analysis (2000 µm sieve)**	**Pre-IRA Dataset**	**Removed in Post-IRA Dataset**	
RR-224		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616203.319	2636875.058	32.6936600	-108.1135900	221	199	N	Removed*	Borrow
RR-225		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616203.002	2636995.036	32.6936600	-108.1132000	98	88	N	Removed*	Borrow
RR-226		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616083.261	2636874.741	32.6933300	-108.1135900	257	231	N	Removed*	Borrow
RR-227		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616082.944	2636994.719	32.6933300	-108.1132000	221	199	N	Removed*	Borrow
RR-228		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615963.203	2636874.424	32.6930000	-108.1135900	174	157	N	Removed*	Borrow
RR-229		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615962.886	2636994.403	32.6930000	-108.1132000	409	368	N	Removed*	Borrow
RR-230		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615960.681	2637834.254	32.6930000	-108.1104700	357	321	N	Removed*	Borrow
RR-231		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615842.828	2636994.086	32.6926700	-108.1132000	126	113	N	Removed*	Borrow
RR-232		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615842.512	2637114.065	32.6926700	-108.1128100	135	122	N	Removed*	Borrow
RR-233		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615840.623	2637833.940	32.6926700	-108.1104700	64	58	N	Removed*	Borrow
RR-234		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615722.762	2636996.846	32.6923400	-108.1131900	237	213	N	Removed*	Borrow
RR-235		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615722.445	2637116.825	32.6923400	-108.1128000	119	107	N	Removed*	Borrow
RR-236		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615720.870	2637716.723	32.6923400	-108.1108500	74	67	N	Removed*	Borrow
RR-237		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615720.557	2637836.703	32.6923400	-108.1104600	48	43	N	Removed*	Borrow
RR-238		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615602.703	2636996.529	32.6920100	-108.1131900	177	159	N	Removed*	Borrow
RR-239		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615602.387	2637116.509	32.6920100	-108.1128000	161	145	N	Removed*	Borrow
RR-240		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615602.071	2637236.489	32.6920100	-108.1124100	130	117	N	Removed*	Borrow
RR-241		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615600.812	2637716.409	32.6920100	-108.1108500	76	68	N	Removed*	Borrow
RR-242		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615600.499	2637836.389	32.6920100	-108.1104600	126	113	N	Removed*	Borrow
RR-243		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618782.339	2637038.756	32.7007500	-108.1130800	176	158	N	Removed*	Borrow
RR-244		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618596.275	2637235.139	32.7002400	-108.1124400	169	152	N	Removed*	Borrow
RR-245		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	618553.315	2636970.476	32.7001200	-108.1133000	139	125	N	Removed*	Borrow
RR-246		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	617232.090	2637188.481	32.6964900	-108.1125800	252	227	N	Removed*	Borrow
RR-247		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616537.653	2637017.454	32.6945800	-108.1131300	96	86	N	Removed*	Borrow
RR-248		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	616063.927	2637308.461	32.6932800	-108.1121800	63	57	N	Removed*	Borrow
RR-249		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615386.775	2637482.039	32.6914200	-108.1116100	83	75	N	Removed*	Borrow
RR-250		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	615358.317	2637235.848	32.6913400	-108.1124100	98	88	N	Removed*	Borrow
RR-251		Razorback Ridge Interim Removal Action, Golder 20	2014	0-1"	2 mm sieve	619099.400	2636833.493	32.7016200	-108.1137500	457	411	N	Removed*	Borrow
B-001		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620007.640	2634227.738	32.7040970	-108.1222290	835	734	N		
B-002		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620007.659	2634273.879	32.7040980	-108.1220790	329	268	N		
B-003		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620007.642	2634320.326	32.7040980	-108.1219280	1392	1275	N		
B-004		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620007.662	2634366.467	32.7040980	-108.1217780	1168	1055	N		
B-005		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620053.954	2634227.557	32.7042250	-108.1222300	487	410	N		
B-006		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620053.937	2634274.005	32.7042250	-108.1220790	1832	1716	N		
B-007		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620053.956	2634320.145	32.7042250	-108.1219290	209	164	N		
B-008		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620053.939	2634366.593	32.7042250	-108.1217780	1671	1553	N		
B-009		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620100.248	2634181.235	32.7043510	-108.1223810	240	190	N		
B-010		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620100.267	2634227.683	32.7043520	-108.1222300	3231	3169	N		
B-012		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620100.270	2634320.271	32.7043520	-108.1219290	1386	1269	N		
B-013		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620100.254	2634366.411	32.7043530	-108.1217790	2064	1952	N		
B-014		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620146.562	2634181.361	32.7044790	-108.1223810	2577	2481	N		
B-015		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620146.545	2634227.501	32.7044790	-108.1222310	1889	1774	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
B-016		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620146.564	2634273.949	32.7044790	-108.1220800	191	149	N		
B-018		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620146.567	2634366.537	32.7044800	-108.1217790	2568	2472	N		
B-019		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620146.550	2634412.985	32.7044800	-108.1216280	3617	3580	N		
B-020		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.856	2634135.040	32.7046060	-108.1225320	313	254	N		
B-021		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.876	2634181.180	32.7046060	-108.1223820	67	48	N		
B-022		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.859	2634227.628	32.7046060	-108.1222310	657	567	N		
B-023		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.879	2634273.768	32.7046070	-108.1220810	5343	4808	N	Removed	Inaccessible
B-024		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.861	2634320.215	32.7046070	-108.1219300	1370	1253	N		
B-025		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.880	2634366.663	32.7046070	-108.1217790	268	215	N		
B-026		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.864	2634412.803	32.7046080	-108.1216290	244	194	N		
B-027		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620192.883	2634459.251	32.7046080	-108.1214780	459	384	N		
B-028		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.171	2634134.859	32.7047330	-108.1225330	69	49	N		
B-029		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.190	2634181.306	32.7047330	-108.1223820	1529	1411	N		
B-030		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.172	2634227.754	32.7047340	-108.1222310	145	111	N		
B-031		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.156	2634273.894	32.7047340	-108.1220810	3197	3133	N		
B-032		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.175	2634320.341	32.7047340	-108.1219300	1037	928	N		
B-033		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.158	2634366.481	32.7047350	-108.1217800	195	153	N		
B-034		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.178	2634412.929	32.7047350	-108.1216290	1835	1719	N		
B-035		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.161	2634459.069	32.7047350	-108.1214790	1645	1527	N		
B-036		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620239.181	2634505.516	32.7047360	-108.1213280	651	561	N		
B-037		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.465	2634088.845	32.7048600	-108.1226830	1561	1443	N		
B-038		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.484	2634134.985	32.7048600	-108.1225330	1410	1293	N		
B-039		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.467	2634181.432	32.7048610	-108.1223820	185	144	N		
B-040		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.486	2634227.572	32.7048610	-108.1222320	138	105	N		
B-042		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.489	2634320.160	32.7048620	-108.1219310	3475	3429	N		
B-043		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.472	2634366.607	32.7048620	-108.1217800	3047	2974	N		
B-044		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.492	2634412.747	32.7048620	-108.1216300	2188	2080	N		
B-045		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.475	2634459.195	32.7048630	-108.1214790	2142	2032	N		
B-046		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620285.495	2634505.335	32.7048630	-108.1213290	1374	1257	N		
B-047		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.773	2633718.314	32.7049840	-108.1238880	1355	1238	N		
B-048		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.779	2634088.664	32.7049870	-108.1226840	1936	1821	N		
B-049		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.798	2634135.111	32.7049880	-108.1225330	3608	3570	N		
B-050		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.781	2634181.251	32.7049880	-108.1223830	3046	2974	N		Prior Bedrock[8]
B-051		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.800	2634227.699	32.7049880	-108.1222320	1066	955	N		
B-052		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.783	2634273.838	32.7049880	-108.1220820	1036	927	N		
B-053		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620331.766	2634320.286	32.7049890	-108.1219310	659	568	N		
B-059		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.087	2633718.134	32.7051120	-108.1238890	1851	1735	N		
B-060		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.105	2633764.581	32.7051120	-108.1237380	279	224	N		
B-061		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.090	2633996.203	32.7051140	-108.1229850	820	719	N		
B-062		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.074	2634042.343	32.7051140	-108.1228350	1052	942	N		
B-063		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.092	2634088.790	32.7051140	-108.1226840	2191	2082	N		
B-064		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.097	2634273.964	32.7051160	-108.1220820	1832	1716	N		Prior Bedrock[8]

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
B-065		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620378.080	2634320.104	32.7051160	-108.1219320	3160	3094	N		
B-073		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.402	2633810.848	32.7052400	-108.1235880	2406	2304	N		
B-074		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.403	2633903.435	32.7052400	-108.1232870	3633	3597	N		
B-075		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.385	2633949.882	32.7052410	-108.1231360	2206	2098	N		
B-076		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.405	2633996.022	32.7052410	-108.1229860	549	467	N		
B-077		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.411	2634273.783	32.7052430	-108.1220830	3131	3063	N		Prior Bedrock[8]
B-078		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.394	2634320.230	32.7052430	-108.1219320	423	351	N		
B-079		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.413	2634366.678	32.7052440	-108.1217810	3045	2972	N		
B-080		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620424.397	2634412.817	32.7052440	-108.1216310	3239	3177	N		
B-086		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.697	2633764.527	32.7053660	-108.1237390	3587	3547	N		
B-087		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.715	2633810.975	32.7053670	-108.1235880	88	65	N		
B-088		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.698	2633857.114	32.7053670	-108.1234380	141	107	N		
B-089		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.716	2633903.561	32.7053680	-108.1232870	627	538	N		
B-090		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.700	2633949.701	32.7053680	-108.1231370	914	809	N		
B-091		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.707	2634320.356	32.7053710	-108.1219320	1621	1504	N		Prior Bedrock[8]
B-092		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.691	2634366.496	32.7053710	-108.1217820	40	28	N		
B-093		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.710	2634412.943	32.7053710	-108.1216310	60	42	N		
B-094		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.694	2634459.083	32.7053720	-108.1214810	54	38	N		
B-097		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.717	2634598.117	32.7053730	-108.1210290	2612	2518	N		
B-098		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620470.697	2635616.880	32.7053800	-108.1177170	2287	2181	N		
B-099		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.009	2633672.067	32.7054930	-108.1240400	2342	2238	N		
B-105		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.022	2634320.175	32.7054980	-108.1219330	538	456	N		
B-106		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.004	2634366.622	32.7054980	-108.1217820	517	437	N		
B-107		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.024	2634412.762	32.7054990	-108.1216320	180	140	N		
B-108		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.007	2634459.209	32.7054990	-108.1214810	2130	2020	N		Prior Bedrock[8]
B-109		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620516.991	2634505.348	32.7054990	-108.1213310	1888	1773	N		Prior Bedrock[8]
B-110		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.011	2634551.795	32.7055000	-108.1211800	397	329	N		
B-115		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.020	2635477.971	32.7055070	-108.1181690	723	628	N		
B-116		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620517.005	2635524.110	32.7055070	-108.1180190	383	316	N		
B-117		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620516.990	2635570.557	32.7055070	-108.1178680	506	427	N		
B-118		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.324	2633671.887	32.7056200	-108.1240410	3427	3377	N		
B-119		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.305	2633718.334	32.7056210	-108.1238900	4208	4217	N	Removed	Inaccessible
B-123		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.308	2633903.507	32.7056220	-108.1232880	3485	3439	N		
B-124		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.316	2634273.854	32.7056250	-108.1220840	704	610	N		
B-125		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.299	2634320.301	32.7056250	-108.1219330	2850	2767	N		
B-126		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.319	2634366.440	32.7056260	-108.1217830	77	56	N		
B-127		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.301	2634412.887	32.7056260	-108.1216320	433	360	N		
B-128		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.322	2634459.027	32.7056260	-108.1214820	141	107	N		
B-129		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.305	2634505.474	32.7056270	-108.1213310	105	78	N		
B-130		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.325	2634551.614	32.7056270	-108.1211810	2962	2884	N		Prior Bedrock[8]
B-132		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.301	2635246.475	32.7056320	-108.1189220	2509	2411	N		
B-133		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.323	2635292.614	32.7056330	-108.1187720	1723	1606	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
B-134		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.307	2635339.061	32.7056330	-108.1186210	3100	3030	N		
B-135		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.328	2635385.201	32.7056330	-108.1184710	3381	3328	N		
B-136		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.313	2635431.648	32.7056330	-108.1183200	795	696	N		
B-137		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.298	2635477.787	32.7056340	-108.1181700	735	640	N		
B-138		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620563.319	2635524.234	32.7056340	-108.1180190	917	812	N		
B-139		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.619	2633625.566	32.7057470	-108.1241920	1860	1744	N		
B-140		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.601	2633672.013	32.7057480	-108.1240410	3381	3328	N		
B-141		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.620	2633718.153	32.7057480	-108.1238910	1676	1558	N		
B-142		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.602	2633764.600	32.7057480	-108.1237400	2209	2101	N		
B-145		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.622	2633903.326	32.7057490	-108.1232890	2053	1941	N		
B-146		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.629	2634273.980	32.7057520	-108.1220840	570	486	N		
B-147		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.613	2634320.119	32.7057530	-108.1219340	2441	2340	N		
B-148		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.632	2634366.566	32.7057530	-108.1217830	2165	2056	N		
B-149		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.616	2634412.706	32.7057530	-108.1216330	104	78	N		
B-150		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.635	2634459.153	32.7057540	-108.1214820	1741	1624	N		
B-151		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.618	2634505.600	32.7057540	-108.1213310	1398	1282	N	Removed	Bedrock
B-152		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.602	2634551.739	32.7057540	-108.1211810	2122	2012	N		Prior Bedrock[8]
B-153		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.621	2634598.186	32.7057550	-108.1210300	2235	2127	N		Prior Bedrock[8]
B-154		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.605	2634644.326	32.7057550	-108.1208800	1669	1552	N		Prior Bedrock[8]
B-155		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.625	2634690.773	32.7057550	-108.1207290	910	806	N		
B-156		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.609	2634736.912	32.7057560	-108.1205790	1219	1105	N		
B-157		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.629	2634783.359	32.7057560	-108.1204280	388	321	N		
B-158		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.613	2634829.499	32.7057560	-108.1202780	350	287	N		
B-159		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.626	2635107.566	32.7057580	-108.1193740	2966	2889	N		Prior Bedrock[8]
B-161		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.631	2635200.152	32.7057590	-108.1190730	1934	1820	N		
B-162		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.616	2635246.292	32.7057590	-108.1189230	2831	2747	N		
B-163		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.600	2635292.739	32.7057600	-108.1187720	1983	1870	N		
B-164		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620609.621	2635338.878	32.7057600	-108.1186220	2881	2799	N		
B-166		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.932	2633625.693	32.7058750	-108.1241920	1101	990	N		
B-167		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.915	2633671.833	32.7058750	-108.1240420	1181	1068	N		
B-168		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.933	2633718.280	32.7058750	-108.1238910	858	756	N		
B-169		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.916	2633764.419	32.7058760	-108.1237410	1701	1584	N		
B-170		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.934	2633810.866	32.7058760	-108.1235900	224	177	N		
B-174		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.926	2634320.245	32.7058800	-108.1219340	185	144	N		
B-175		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.910	2634366.385	32.7058800	-108.1217840	3028	2954	N		
B-176		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.929	2634412.832	32.7058800	-108.1216330	572	488	N		
B-177		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.912	2634459.279	32.7058810	-108.1214820	1345	1228	N		
B-178		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.932	2634505.418	32.7058810	-108.1213320	1235	1121	N		
B-179		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.915	2634551.865	32.7058810	-108.1211810	2256	2149	N		Prior Bedrock[8]
B-180		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.936	2634598.004	32.7058820	-108.1210310	1787	1671	N	Removed	Bedrock
B-181		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.919	2634644.451	32.7058820	-108.1208800	316	257	N		
B-182		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.939	2634690.591	32.7058830	-108.1207300	1763	1646	N		Prior Bedrock[8]

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
B-183		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.923	2634737.038	32.7058830	-108.1205790	2267	2161	N		Prior Bedrock[8]
B-184		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.907	2634783.177	32.7058830	-108.1204290	1499	1382	N		Prior Bedrock[8]
B-185		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.927	2634829.624	32.7058840	-108.1202780	976	869	N		
B-186		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.911	2634875.763	32.7058840	-108.1201280	2309	2204	N		Prior Bedrock[8]
B-187		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.931	2634922.210	32.7058840	-108.1199770	1466	1348	N		Prior Bedrock[8]
B-188		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.915	2634968.350	32.7058850	-108.1198270	576	491	N		
B-189		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.935	2635014.797	32.7058850	-108.1196760	649	558	N		
B-190		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.919	2635061.244	32.7058850	-108.1195250	2166	2057	N		Prior Bedrock[8]
B-191		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.940	2635107.383	32.7058860	-108.1193750	1813	1696	N		Prior Bedrock[8]
B-194		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.929	2635246.416	32.7058870	-108.1189230	3512	3468	N		
B-195		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.914	2635292.556	32.7058870	-108.1187730	2731	2643	N		
B-196		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620655.935	2635339.003	32.7058870	-108.1186220	170	132	N		
B-197		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.247	2633625.513	32.7060020	-108.1241930	658	567	N		
B-198		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.228	2633671.960	32.7060020	-108.1240420	1346	1230	N		
B-199		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.247	2633718.099	32.7060030	-108.1238920	1578	1460	N		
B-200		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.229	2633764.546	32.7060030	-108.1237410	3603	3565	N		
B-201		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.211	2633810.993	32.7060030	-108.1235900	273	219	N		
B-202		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.231	2633857.132	32.7060040	-108.1234400	499	420	N		
B-203		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.213	2633903.579	32.7060040	-108.1232890	380	313	N		
B-206		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.240	2634320.371	32.7060070	-108.1219340	3203	3139	N		
B-207		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.224	2634366.511	32.7060070	-108.1217840	430	358	N		
B-208		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.243	2634412.958	32.7060080	-108.1216330	945	839	N		
B-209		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.226	2634459.097	32.7060080	-108.1214830	1161	1048	N		
B-210		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.246	2634505.544	32.7060090	-108.1213320	3324	3268	N		Prior Bedrock[8]
B-211		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.230	2634551.683	32.7060090	-108.1211820	313	254	N		
B-212		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.213	2634598.130	32.7060090	-108.1210310	3451	3403	N		Prior Bedrock[8]
B-213		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.233	2634644.269	32.7060100	-108.1208810	1855	1740	N		Prior Bedrock[8]
B-214		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.216	2634690.716	32.7060100	-108.1207300	765	667	N		
B-215		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.237	2634736.856	32.7060100	-108.1205800	3511	3466	N		Prior Bedrock[8]
B-216		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.220	2634783.302	32.7060100	-108.1204290	5700	5854	N	Removed	Bedrock
B-217		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.241	2634829.442	32.7060110	-108.1202790	6517	6766	N	Removed	Bedrock
B-218		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.224	2634875.889	32.7060110	-108.1201280	1375	1258	N		Prior Bedrock[8]
B-219		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.244	2634922.336	32.7060120	-108.1199770	621	532	N		
B-220		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.229	2634968.475	32.7060120	-108.1198270	323	263	N		
B-221		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.212	2635014.922	32.7060120	-108.1196760	2814	2729	N		Prior Bedrock[8]
B-222		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.233	2635061.061	32.7060130	-108.1195260	1303	1187	N		
B-223		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.217	2635107.508	32.7060130	-108.1193750	3347	3292	N		Prior Bedrock[8]
B-226		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.243	2635246.234	32.7060140	-108.1189240	2650	2558	N		
B-227		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620702.228	2635292.680	32.7060140	-108.1187730	149	114	N		
B-228		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.524	2633625.640	32.7061290	-108.1241930	1998	1885	N		
B-229		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.542	2633672.087	32.7061300	-108.1240420	1597	1479	N		
B-230		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.525	2633718.226	32.7061300	-108.1238920	1088	977	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
B-231		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.543	2633764.673	32.7061300	-108.1237410	163	125	N		
B-232		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.526	2633810.812	32.7061310	-108.1235910	410	340	N		
B-233		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.544	2633857.259	32.7061310	-108.1234400	897	793	N		
B-234		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.527	2633903.398	32.7061310	-108.1232900	696	603	N		
B-237		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.547	2634042.431	32.7061320	-108.1228380	1954	1840	N		
B-238		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.518	2634320.190	32.7061340	-108.1219350	2058	1946	N		
B-239		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.537	2634366.637	32.7061350	-108.1217840	2510	2412	N		
B-240		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.521	2634412.776	32.7061350	-108.1216340	275	221	N		
B-241		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.540	2634459.223	32.7061350	-108.1214830	1275	1160	N		
B-242		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.524	2634505.362	32.7061360	-108.1213330	1291	1175	N		
B-243		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.543	2634551.809	32.7061360	-108.1211820	1123	1011	N		
B-244		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.527	2634597.948	32.7061360	-108.1210320	2513	2415	N		Prior Bedrock[8]
B-245		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.547	2634644.395	32.7061370	-108.1208810	162	124	N		
B-246		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.531	2634690.534	32.7061370	-108.1207310	343	280	N		
B-247		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.518	2634829.567	32.7061380	-108.1202790	138	105	N		
B-248		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.538	2634876.014	32.7061390	-108.1201280	3599	3561	N		Prior Bedrock[8]
B-249		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.522	2634922.153	32.7061390	-108.1199780	1011	902	N		
B-250		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.542	2634968.600	32.7061390	-108.1198270	2451	2350	N		Prior Bedrock[8]
B-251		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.527	2635014.739	32.7061390	-108.1196770	2023	1910	N		Prior Bedrock[8]
B-252		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.547	2635061.186	32.7061400	-108.1195260	2778	2692	N		Prior Bedrock[8]
B-253		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.531	2635107.325	32.7061400	-108.1193760	2289	2183	N		Prior Bedrock[8]
B-254		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.552	2635153.772	32.7061410	-108.1192250	2973	2897	N		Prior Bedrock[8]
B-255		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.537	2635199.911	32.7061410	-108.1190750	2362	2258	N		Prior Bedrock[8]
B-256		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.521	2635246.358	32.7061410	-108.1189240	2122	2012	N	Removed	Bedrock
B-257		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620748.542	2635292.498	32.7061420	-108.1187740	776	678	N		
B-258		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.855	2633579.320	32.7062560	-108.1243440	143	109	N		
B-259		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.837	2633625.767	32.7062560	-108.1241930	741	645	N		
B-260		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.856	2633671.906	32.7062570	-108.1240430	1057	947	N		
B-261		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.838	2633718.353	32.7062570	-108.1238920	1880	1765	N		
B-262		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.857	2633764.492	32.7062570	-108.1237420	1809	1693	N		
B-263		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.839	2633810.939	32.7062580	-108.1235910	1445	1328	N		
B-264		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.858	2633857.078	32.7062580	-108.1234410	1678	1561	N		
B-265		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.841	2633903.525	32.7062580	-108.1232900	1922	1807	N		
B-266		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.824	2633949.664	32.7062590	-108.1231400	3199	3135	N		
B-267		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.842	2633996.111	32.7062590	-108.1229890	113	85	N		
B-268		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.825	2634042.250	32.7062600	-108.1228390	218	172	N		
B-269		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.844	2634088.697	32.7062600	-108.1226880	840	739	N		
B-270		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.831	2634320.316	32.7062620	-108.1219350	1289	1174	N		
B-271		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.851	2634366.455	32.7062620	-108.1217850	2343	2239	N		Prior Bedrock[8]
B-272		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.834	2634412.902	32.7062620	-108.1216340	978	871	N		
B-273		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.854	2634459.041	32.7062630	-108.1214840	1152	1039	N		
B-274		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.837	2634505.488	32.7062630	-108.1213330	3489	3443	N		Prior Bedrock[8]

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
B-275		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.857	2634551.627	32.7062630	-108.1211830	3413	3362	N		Prior Bedrock[8]
B-276		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.841	2634598.074	32.7062640	-108.1210320	2757	2670	N		Prior Bedrock[8]
B-277		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.856	2634968.418	32.7062660	-108.1198280	2196	2087	N		Prior Bedrock[8]
B-278		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.840	2635014.864	32.7062670	-108.1196770	1189	1075	N		
B-279		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.825	2635061.003	32.7062670	-108.1195270	1914	1799	N		Prior Bedrock[8]
B-280		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.845	2635107.450	32.7062680	-108.1193760	2227	2119	N		Prior Bedrock[8]
B-281		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.830	2635153.589	32.7062680	-108.1192260	1284	1169	N		
B-282		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.850	2635200.036	32.7062680	-108.1190750	2906	2826	N		Prior Bedrock[8]
B-283		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620794.834	2635246.483	32.7062690	-108.1189240	2396	2294	N		Prior Bedrock[8]
B-284		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.133	2633579.447	32.7063830	-108.1243440	1839	1723	N	Removed	Bedrock
B-285		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.152	2633625.586	32.7063840	-108.1241940	1022	913	N		
B-286		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.133	2633672.033	32.7063840	-108.1240430	507	428	N		
B-287		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.152	2633718.172	32.7063840	-108.1238930	1010	902	N		
B-288		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.134	2633764.619	32.7063850	-108.1237420	990	882	N		
B-289		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.153	2633810.758	32.7063850	-108.1235920	892	788	N		
B-290		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.135	2633857.205	32.7063850	-108.1234410	2281	2175	N		
B-291		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.155	2633903.344	32.7063860	-108.1232910	659	568	N		
B-292		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.137	2633949.791	32.7063860	-108.1231400	1690	1573	N		
B-293		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.156	2633996.237	32.7063870	-108.1229890	1273	1158	N		
B-294		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.139	2634042.377	32.7063870	-108.1228390	1231	1117	N		
B-295		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.157	2634088.823	32.7063870	-108.1226880	2403	2301	N		
B-296		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.141	2634134.962	32.7063870	-108.1225380	912	807	N		
B-297		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.160	2634181.409	32.7063880	-108.1223870	1224	1109	N		
B-298		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.146	2634320.134	32.7063890	-108.1219360	582	497	N		
B-299		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.128	2634366.581	32.7063890	-108.1217850	990	882	N		
B-300		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.148	2634412.720	32.7063900	-108.1216350	934	828	N		
B-301		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.131	2634459.167	32.7063900	-108.1214840	944	838	N		
B-302		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.151	2634505.306	32.7063900	-108.1213340	1179	1065	N		
B-303		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.134	2634551.753	32.7063910	-108.1211830	370	305	N		
B-304		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.134	2634968.543	32.7063940	-108.1198280	228	180	N		
B-305		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.154	2635014.682	32.7063940	-108.1196780	2436	2335	N		Prior Bedrock[8]
B-306		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.138	2635061.128	32.7063940	-108.1195270	2958	2880	N		Prior Bedrock[8]
B-308		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.143	2635153.714	32.7063950	-108.1192260	1741	1624	N		Prior Bedrock[8]
B-309		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.163	2635200.161	32.7063950	-108.1190750	1690	1573	N		
B-310		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620841.148	2635246.300	32.7063960	-108.1189250	3394	3342	N		
B-311		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.447	2633579.267	32.7065110	-108.1243450	1598	1481	N		
B-312		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.465	2633625.713	32.7065110	-108.1241940	3534	3492	N		
B-313		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.448	2633671.852	32.7065110	-108.1240440	1685	1567	N		
B-314		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.466	2633718.299	32.7065120	-108.1238930	2172	2062	N		
B-315		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.449	2633764.438	32.7065120	-108.1237430	766	669	N		
B-316		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.467	2633810.885	32.7065120	-108.1235920	2350	2247	N		
B-317		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.450	2633857.024	32.7065130	-108.1234420	1110	999	N		

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STSIU Feasibility Study
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Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
B-318		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.468	2633903.471	32.7065130	-108.1232910	2684	2593	N		
B-319		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.450	2633949.917	32.7065130	-108.1231400	1753	1636	N		
B-320		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.470	2633996.056	32.7065140	-108.1229900	2828	2743	N		
B-321		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.452	2634042.503	32.7065140	-108.1228390	3133	3065	N		
B-322		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.435	2634088.642	32.7065140	-108.1226890	3127	3059	N		
B-323		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.454	2634135.089	32.7065150	-108.1225380	336	275	N		
B-324		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.438	2634181.228	32.7065150	-108.1223880	3046	2974	N		Prior Bedrock[8]
B-325		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.457	2634227.674	32.7065160	-108.1222370	3371	3318	N		Prior Bedrock[8]
B-326		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.459	2634320.260	32.7065160	-108.1219360	1323	1207	N		Prior Bedrock[8]
B-327		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.443	2634366.399	32.7065160	-108.1217860	1962	1848	N		Prior Bedrock[8]
B-328		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.462	2634412.846	32.7065170	-108.1216350	2944	2865	N		Prior Bedrock[8]
B-329		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.457	2635153.839	32.7065220	-108.1192260	148	113	N		
B-330		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620887.441	2635199.978	32.7065230	-108.1190760	2242	2134	N		
B-331		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620933.760	2633579.394	32.7066380	-108.1243450	1892	1776	N		
B-332		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620933.743	2633625.533	32.7066380	-108.1241950	1140	1028	N		
B-333		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620933.761	2633671.979	32.7066390	-108.1240440	1784	1668	N		
B-334		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620933.744	2633718.118	32.7066390	-108.1238940	799	700	N		
B-335		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620933.762	2633764.565	32.7066390	-108.1237430	658	567	N		
B-336		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620933.755	2635200.103	32.7066500	-108.1190760	405	336	N		
B-337		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.056	2633533.074	32.7067650	-108.1244960	730	635	N		
B-338		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.075	2633579.213	32.7067650	-108.1243460	3045	2972	N		Prior Bedrock[8]
B-339		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.056	2633625.660	32.7067660	-108.1241950	2626	2532	N		Prior Bedrock[8]
B-340		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.075	2633671.799	32.7067660	-108.1240450	2399	2297	N		
B-341		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.057	2633718.245	32.7067660	-108.1238940	2688	2598	N		
B-342		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.076	2633764.692	32.7067670	-108.1237430	3356	3301	N		
B-343		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.048	2635153.781	32.7067770	-108.1192270	344	281	N		
B-344		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.370	2633532.894	32.7068920	-108.1244970	929	824	N		
B-345		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.352	2633579.340	32.7068920	-108.1243460	929	824	N		
B-346		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.370	2633625.787	32.7068930	-108.1241950	1571	1453	N		
B-347		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.352	2633671.926	32.7068930	-108.1240450	1245	1131	N		
B-348		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.371	2633718.372	32.7068930	-108.1238940	1899	1784	N		
B-349		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.378	2635107.460	32.7069040	-108.1193780	743	647	N		
B-350		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621026.362	2635153.598	32.7069040	-108.1192280	2215	2107	N		Prior Bedrock[8]
B-351		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.684	2633533.021	32.7070190	-108.1244970	313	254	N		
B-352		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.665	2633579.467	32.7070200	-108.1243460	2450	2350	N		
B-353		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.684	2633625.606	32.7070200	-108.1241960	2949	2871	N		
B-354		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.666	2633672.053	32.7070200	-108.1240450	1874	1758	N		
B-355		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.685	2633718.191	32.7070210	-108.1238950	746	649	N		
B-356		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.671	2635061.138	32.7070310	-108.1195290	1186	1072	N	Removed	
B-357		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621072.692	2635107.277	32.7070310	-108.1193790	1096	985	N		
B-358		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.997	2633533.148	32.7071470	-108.1244970	808	708	N		
B-359		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.980	2633579.287	32.7071470	-108.1243470	171	132	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

										Copper Concentration				
Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)	Pre-IRA Dataset	Removed in Post-IRA Dataset	
B-360		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.998	2633625.733	32.7071470	-108.1241960	3146	3079	N		Prior Bedrock[8]
B-361		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.980	2633671.872	32.7071480	-108.1240460	2029	1916	N		Prior Bedrock[8]
B-362		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.964	2635014.817	32.7071580	-108.1196800	447	373	N	Removed	
B-363		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.984	2635061.263	32.7071580	-108.1195290	1095	984	N		
B-364		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621118.969	2635107.402	32.7071580	-108.1193790	1395	1278	N		
B-365		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621165.278	2635014.942	32.7072850	-108.1196800	1540	1422	N	Removed	
B-366		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621165.299	2635061.081	32.7072850	-108.1195300	1575	1458	N		
B-367		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621165.282	2635107.527	32.7072860	-108.1193790	1142	1030	N		
B-368		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621211.607	2634968.621	32.7074120	-108.1198310	869	767	N	Removed	
B-369		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621211.592	2635014.759	32.7074120	-108.1196810	728	632	N		
B-370		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621211.576	2635061.205	32.7074130	-108.1195300	476	399	N		
B-371		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621257.901	2634922.300	32.7075390	-108.1199820	2916	2836	N	Removed	Bedrock
B-372		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621257.885	2634968.438	32.7075390	-108.1198320	3287	3228	N	Removed	Bedrock
B-373		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621257.905	2635014.884	32.7075400	-108.1196810	391	323	N		
B-374		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621257.890	2635061.023	32.7075400	-108.1195310	350	287	N		
B-375		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621304.215	2634922.117	32.7076660	-108.1199830	2670	2579	N	Removed	
B-376		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621304.199	2634968.563	32.7076670	-108.1198320	1352	1236	N		
B-377		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621304.220	2635014.702	32.7076670	-108.1196820	1356	1240	N		
B-378		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621350.509	2634875.797	32.7077930	-108.1201340	779	681	N	Removed	
B-379		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621350.492	2634922.242	32.7077930	-108.1199830	1567	1449	N		
B-380		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621350.513	2634968.381	32.7077940	-108.1198330	2808	2723	N		Prior Bedrock[8]
B-381		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621396.802	2634829.476	32.7079200	-108.1202850	2079	1968	N	Removed	Bedrock
B-382		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621396.822	2634875.922	32.7079200	-108.1201340	2403	2301	N		Prior Bedrock[8]
B-383		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621396.807	2634922.060	32.7079210	-108.1199840	730	635	N		
B-384		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621443.132	2634783.155	32.7080470	-108.1204360	2452	2352	N	Removed	Bedrock
B-385		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621443.116	2634829.601	32.7080470	-108.1202850	385	317	N		
B-386		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621443.137	2634875.739	32.7080480	-108.1201350	1758	1641	N		Prior Bedrock[8]
B-387		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621271.670	2634983.547	32.7075770	-108.1197830	651	561	N		
B-388		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621275.483	2635026.497	32.7075880	-108.1196430	259	207	N		
B-389		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621320.869	2634885.159	32.7077120	-108.1201030	6292	6514	N	Removed	Bedrock
B-390		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621322.782	2634931.241	32.7077170	-108.1199530	191	149	N		
B-391		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621324.694	2634977.324	32.7077230	-108.1198040	1226	1112	N		
B-393		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621370.057	2634885.169	32.7078470	-108.1201040	1127	1015	N		Prior Bedrock[8]
B-394		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621371.969	2634931.251	32.7078530	-108.1199540	621	532	N		
B-395		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621423.069	2634829.731	32.7079920	-108.1202840	2392	2289	N		
B-396		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621423.082	2634878.915	32.7079930	-108.1201250	737	641	N		
B-397		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620336.835	2633650.134	32.7049980	-108.1241100	1365	1249	N		
B-398		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620386.349	2633650.485	32.7051340	-108.1241090	2189	2080	N		
B-399		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620437.849	2633643.305	32.7052750	-108.1241330	1043	933	N		
B-400		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620488.446	2633646.889	32.7054140	-108.1241220	270	216	N		
B-401		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620539.809	2633596.830	32.7055550	-108.1242850	3425	3375	N		
B-402		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620592.547	2633602.142	32.7057000	-108.1242680	771	673	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
B-403		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620635.695	2633602.476	32.7058190	-108.1242670	1029	920	N		
B-404		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620687.795	2633601.788	32.7059620	-108.1242700	284	228	N		
B-405		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620690.437	2633553.995	32.7059690	-108.1244250	2846	2763	N		
B-406		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620732.755	2633551.774	32.7060850	-108.1244330	2090	1979	N		
B-407		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620784.120	2633553.883	32.7062260	-108.1244270	600	513	N		
B-408		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620832.320	2633555.954	32.7063590	-108.1244200	3576	3536	N		
B-409		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620879.738	2633551.316	32.7064890	-108.1244360	1913	1798	N		
B-410		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620930.945	2633504.918	32.7066300	-108.1245870	759	662	N		
B-411		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620980.576	2633502.686	32.7067660	-108.1245950	1023	914	N		
B-412		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621032.668	2633505.013	32.7069090	-108.1245880	915	810	N		
B-413		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620384.967	2633756.541	32.7051310	-108.1237640	249	199	N		
B-414		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621130.294	2633460.188	32.7071770	-108.1247340	155	119	N		
B-415		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620881.268	2634282.379	32.7064990	-108.1220590	1841	1725	N		
B-416		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620833.710	2634285.079	32.7063680	-108.1220500	106	79	N		
B-417		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620784.444	2634286.852	32.7062330	-108.1220440	1928	1813	N		
B-418		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620384.975	2634006.557	32.7051330	-108.1229510	2599	2504	N		
BX-038		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620238.544	2634098.037	32.7047310	-108.1226530	436	364	N		
BX-063		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620533.764	2634639.229	32.7055460	-108.1208960	1249	1134	N		Prior Bedrock[8]
BX-065		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620584.864	2634685.323	32.7056870	-108.1207460	2288	2182	N		Prior Bedrock[8]
BX-066		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620584.852	2634783.723	32.7056880	-108.1204270	1441	1324	N		Prior Bedrock[8]
BX-070		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620634.053	2634980.502	32.7058250	-108.1197870	1731	1614	N		Prior Bedrock[8]
BX-071		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620634.066	2635029.718	32.7058250	-108.1196270	2845	2761	N		Prior Bedrock[8]
BX-077		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620535.645	2635275.714	32.7055560	-108.1188270	500	421	N		
BX-079		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620486.434	2635324.920	32.7054210	-108.1186660	50	35	N		
BX-087		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620582.950	2635475.625	32.7056880	-108.1181770	1109	997	N		
BX-098		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621122.361	2635131.249	32.7071680	-108.1193020	1721	1604	N		
BX-111		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621222.541	2634934.446	32.7074420	-108.1199420	3292	3233	N	Removed	Bedrock
BX-116		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621074.930	2635032.846	32.7070370	-108.1196210	2954	2876	N		Prior Bedrock[8]
BX-120		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620978.467	2635078.909	32.7067720	-108.1194700	2236	2129	N		Prior Bedrock[8]
BX-121		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620927.343	2635082.031	32.7066320	-108.1194600	3507	3463	N		Prior Bedrock[8]
BX-122		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620929.256	2635128.114	32.7066370	-108.1193100	2126	2016	N		Prior Bedrock[8]
BX-134		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	620976.559	2633999.622	32.7067590	-108.1229790	1140	1027	N		
BX-169		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621175.239	2633455.328	32.7073010	-108.1247510	246	196	N		
BX-171		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621224.463	2633455.310	32.7074360	-108.1247510	2548	2451	N		
BX-172		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621273.641	2633406.107	32.7075710	-108.1249110	1916	1802	N		
BX-175		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621320.965	2633409.221	32.7077010	-108.1249020	233	185	N		
BX-188		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621421.267	2633356.930	32.7079760	-108.1250730	1152	1039	N		
BX-195		B Ranch Interim Removal Action, Arcadis 2020	2019	shallow	2 mm sieve	621468.555	2633360.044	32.7081060	-108.1250630	862	759	N		
STS-BWC-2011-1		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	620325.258	2638297.829	32.7050000	-108.1090000	--	766	N		
STS-BWC-2011-2		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	619230.643	2639525.419	32.7020000	-108.1050000	--	667	N		
STS-BWC-2011-3		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	622504.963	2639533.807	32.7110000	-108.1050000	--	622	N		
STS-BWC-2011-4		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	619599.237	2637680.730	32.7030000	-108.1110000	--	521	N		

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset	
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)			
STS-BWC-2011-5		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	619593.670	2639833.954	32.7030000	-108.1040000	--	975	N		
STS-BWC-2011-6		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	621414.312	2639223.425	32.7080000	-108.1060000	--	426	N		
STS-BWC-2011-7		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	613790.637	2633050.616	32.6870000	-108.1260000	--	2110	N		
STS-BWC-2011-8		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	613062.165	2633356.275	32.6850000	-108.1250000	--	691	N	Removed*	
STS-BWC-2011-9		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	617044.637	2640750.337	32.6960000	-108.1010000	--	610	N		
STS-BWC-2011-10		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	618500.666	2640446.396	32.7000000	-108.1020000	--	972	N		
STS-BWC-2011-11		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	619590.553	2641064.367	32.7030000	-108.1000000	--	1590	N		
STS-BWC-2011-12		FS Data Collection, submitted herein	2011	0-6"	2 mm sieve (a)	618503.807	2639215.941	32.7000000	-108.1060000	--	709	N		
STS-RWU-2011-1		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	623011.135	2638507.195	32.7124	-108.1083	--	338	N		
STS-RWU-2011-2		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	620140.176	2639527.748	32.7045	-108.1050	--	381	N		
STS-RWU-2011-3		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	621269.579	2638915.463	32.7076	-108.1070	--	998	N		
STS-RWU-2011-4		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	623009.965	2627847.296	32.7123	-108.1430	--	427	N		
STS-RWU-2011-5		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	620932.83	2642605.705	32.7067	-108.0950	--	779	N		
STS-RWU-2011-6		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	621606.498	2634640.262	32.7085	-108.1209	--	1300	N		
STS-RWU-2011-7		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	617485.131	2639213.322	32.6972	-108.1060	--	529	N		
STS-RWU-2011-8		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	622239.895	2642948.807	32.7103	-108.0939	--	287	N		
STS-RWU-2011-9		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	617007.481	2641057.872	32.6959	-108.1000	--	560	N		
STS-RWU-2	STS-PT-2	FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	609319.048	2645961.777	32.6748	-108.0840	--	96	N		Alternate sample (234)
STS-RWU-2011-11		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	609288.573	2643500.09	32.6747	-108.0920	--	216	N		
STS-RWU-2	STS-PT-2	FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	605464.845	2645029.462	32.6642	-108.0870	--	316	N		Alternate sample (152)
STS-RWU-2011-13		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	610054.083	2642886.566	32.6768	-108.0940	--	305	N		
STS-RWU-2	STS-PT-2	FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	621457.93	2636455.245	32.7081	-108.1150	--	1640	N		Alternate sample (153)
STS-RWU-2011-15		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	621860.589	2635533.562	32.7092	-108.1180	--	1640	N		
STS-RWU-2011-16		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	620234.14	2645679.97	32.7048	-108.0850	--	395	N		
STS-RWU-2011-17		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	609837.313	2642270.639	32.6762	-108.0960	--	654	N		
WILDLIFE REFERENC		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	612651.728	2650988.669	32.6840	-108.0677	--	213	N		
WILDLIFE REFERENC		FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	609301.039	2653326.567	32.6748	-108.0601	--	288	N		Alternate sample (164)
STS-RWU-2	STS-PT-2	FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	608053.458	2658115.91	32.6714	-108.0445	--	182	N		Alternate sample (61)
STS-RWU-2	STS-PT-2	FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	608040.451	2658805.776	32.6714	-108.0423	--	344	N		Alternate sample (248)
STS-RWU-2	STS-PT-2	FS Data Collection, submitted herein	2013	0-6"	2 mm sieve (a)	608925.052	2657983.486	32.6738	-108.0449	--	161	N		Alternate sample (253)

[1] PreFS RAC for copper for small ground feeding bird applies to 0-6" soil sieved to < 2 mm (2000 µm). Pre-FS RAC for human health applies to 0-1" soil sieved to < 0.25 mm (250 µm). Ratio used to convert copper concentration of 0-1" sieved at <0.25 mm soils to 0-6" sieved at < 2 mm soils is from Appendix A (median ratio of SS samples) of Arcadis (2011). Multiplied copper concentration by 0.7 if outside windblown tailings (and by 1.5 if inside windblown tailings). If unsieved, multiplied by 0.9 if outside windblown tailings and by 1.3 if inside windblown tailings. The 0.9 and 1.3 are from median ratios of unsieved 0-1" soil in 2009 lab reports (at 25 m on transect) compared to sieved 0-6" co-located soil in Drexler lab report in Appendix D for soils in and outside of windblown tailings, respectively (FID 8, 18, 20 in tailings).

[2] Data collected for ecological endpoint and was never corrected to HH values.

[3] A duplicate sample with the same Loc ID has been recorded in Golf Course Interim Removal Action, Arcadis 2009. This sample was maked as IRA.

[4] A duplicate sample with the same Loc ID has been recorded in Golf Course Interim Removal Action, Arcadis 2009. This sample was marked as HWY 180.

[5] A duplicate sample with the same Loc ID has been recorded in Golf Course Interim Removal Action, Arcadis 2009. This sample was marked as 2:1 slope.

[6] A duplicate sample with the same Loc ID has been recorded in Golf Course Interim Removal Action, Arcadis 2009. This sample was marked as Volcanic Rock.

TABLE 3-2
Sample Summary for Total Copper

STSIU Feasibility Study
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location ID	Alternate ID		Year Collected	Original Soil depth	Sieving Status	Northing (State Plane)	Easting (State Plane)	Latitude	Longitude	Copper Concentration		Pre-IRA Dataset	Removed in Post-IRA Dataset
										To Compare to HH Pre-FS RAC (250 µm sieve)	For Bird Pre-FS RAC Analysis (2000 µm sieve)		

[7] A duplicate sample with the same Loc ID has been recorded in Golf Course Interim Removal Action, Arcadis 2009. This sample was marked as NMDOT.

[8] Samples with an initial bedrock designation that were included in the Thiessens analysis.

*Removed samples with the asterick are set to 327 for the Theissens analysis. All other removed samples are completely voided.

-- means no data available at the location

References

ARCADIS. 2010. AOC Terrestrial Invertebrate Copper Bioaccumulation and Bioavailability Study. Smelter/Tailing Soils Investigation Unit. Prepared for Freeport-McMoRan Chino Mines Company, Vanadium, New Mexico. (composite of 15 samples in 100-m radius plot).
Chino, 1995. Administrative Order on Consent, Investigation Area, Remedial Investigation Background Report, Chino Mines Investigation Area. Prepared by Chino Mines Company, Hurley, New Mexico. Department received 28 October 1995. (one grab sample).

TABLE 3-3
STSIU SOIL COPPER 95 UCLS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Habitat Alliance Polygon ID	Number of Samples	Acres	Copper (mg/kg) Minimum	Copper (mg/kg) Maximum	Copper (mg/kg) Spatially Weighted 95 UCL	**Ratio to 1600 Pre-FS RAC**	**Ratio to 1100 Pre-FS RAC**
1-3	21	23	127	3115	1373	0.9	1.2
1-4	62	360	63	2527	626	0.4	0.6
1-5	2	53	1022	1120	1071 (a)	0.7	1.0
10-11	57	1785	96	1107	474	0.3	0.4
10-14	281	294	34	3463	1077 (b)	0.7	1.0
10-16	10	71	438	1640	1310	0.8	1.2
10-17	10	43	426	1596	1027	0.6	0.9
10-8	55	873	160	2653	782	0.5	0.7
42-15	9	348	285	1611	602	0.4	0.5
88-10	14	107	259	1590	1009	0.6	0.9
88-15	110	46	72	3414	1245	0.8	1.1
88-17	7	15	426	1560	1022	0.6	0.9
88-19	80	879	34	3204	988	0.6	0.9
88-22	8	39	372	1611	810	0.5	0.7
137-7	356	117	58	3414	824	0.5	0.7
137-8	336	4107	34	3695	644	0.4	0.6
Mine Facilities/Urban	188	277	78	3565	555	0.3	0.5
Mine Facilities/Other (29-1)	254	324	14	3342	653	0.4	0.6

Notes:

mg/kg = milligram per kilogram

(a) Polygon has two samples and does not meet minimum sample count to run the bootstrap macro; therefore, the average concentration was estimated.

(b) The bootstrap macro will not accept N>200; therefore, the lowest weight samples are binned together.

Gray shading indicates Ratio > 1 and exceeds the corresponding RAC indicated in the column heading.

TABLE 3-4
STSIU SOIL pCu VALUES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Location	Copper mg/kg	pH SU	pCu (calculated[1])	Latitude	Longitude	Source	Pre-white rain value for boder
ERA02	1000	6.00	4.98	32.6890	-108.1064	Appendix B	No
ERA03	652	5.90	5.37	32.6850	-108.1047	Appendix B	No
ERA04	562	5.40	5.08	32.6891	-108.0922	Appendix B	No
ERA05	238	6.40	7.00	32.6892	-108.0911	Appendix B	No
ERA06	622	6.30	5.80	32.6990	-108.0958	Appendix B	No
ERA07	758	6.70	5.95	32.6758	-108.0998	Appendix B	No
ERA08	643	7.00	6.41	32.6749	-108.1031	Appendix B	No
ERA09	291	4.60	5.09	32.6864	-108.0729	Appendix B	No
ERA10	310	5.30	5.67	32.6837	-108.0666	Appendix B	No
ERA11	277	7.00	7.38	32.6567	-108.0610	Appendix B	No
ERA12	215	7.80	8.42	32.6459	-108.0636	Appendix B	No
ERA13	125	5.50	6.90	32.6825	-108.0489	Appendix B	No
ERA14	129	7.50	8.73	32.6430	-108.1187	Appendix B	No
ERA15	529	7.80	7.40	32.7062	-108.1406	Appendix B	No
FID 10	2550	4.70	2.69	32.7056	-108.1135	Appendix B	No
FID 101	285	3.90	4.47	32.6732	-108.0910	Appendix B	No
FID 102	282	3.50	4.11	32.6624	-108.0887	Appendix B	No
FID 103	443	4.00	4.05	32.6553	-108.0873	Appendix B	No
FID 104	459	3.80	3.83	32.6646	-108.0943	Appendix B	No
FID 105	834	4.50	3.79	32.6873	-108.1033	Appendix B	No
FID 106	516	4.40	4.25	32.6728	-108.0629	Appendix B	No
FID 15	1850	5.60	3.90	32.6978	-108.1069	Appendix B	No
FID 16	1440	4.80	3.44	32.6960	-108.1071	Appendix B	No
FID 17	4550	6.18	2.87	32.6978	-108.1135	Appendix B	No
FID 18	310	4.20	4.65	32.6740	-108.0918	Appendix B	No
FID 22	378	6.90	6.93	32.6669	-108.0780	Appendix B	No
FID 23	202	4.36	4.28	32.6568	-108.0841	Appendix B	No
FID 28	423	7.30	7.17	32.6700	-108.0511	Appendix B	No
FID 37	708	4.70	4.16	32.7064	-108.0954	Appendix B	No
FID 43	636	6.50	5.96	32.6589	-108.0884	Appendix B	No
FID 7	491	5.10	4.96	32.6786	-108.0675	Appendix B	No
FID 8	473	4.60	4.54	32.6668	-108.0920	Appendix B	No
Reference Plot #1	882	8.00	6.98	32.7065	-108.1383	Appendix B	No
Reference Plot #2	760	6.20	5.48	32.7130	-108.1297	Appendix B	No
Reference Plot #3	1540	5.40	3.92	32.7038	-108.1111	Appendix B	No
Reference Plot #4	1020	4.90	3.93	32.6897	-108.1040	Appendix B	No
STS-PCUG-2011-1	263	5.60	6.14	32.6327	-108.0785	FS workplan	No
STS-PCUG-2011-10	324	7.4	7.57	32.6382	-108.0664	FS workplan	No
STS-PCUG-2011-11	254	4.60	5.25	32.6774	-108.0802	FS workplan	No
STS-PCUG-2011-12	536	6.70	6.34	32.6984	-108.0822	FS workplan	No
STS-PCUG-2011-13	602	5.10	4.72	32.7129	-108.0871	FS workplan	No
STS-PCUG-2011-14	354	5.90	6.08	32.6453	-108.0831	FS workplan	No
STS-PCUG-2011-15	357	4.30	4.58	32.6966	-108.0735	FS workplan	No
STS-PCUG-2011-16	864	5.2	4.40	32.7158	-108.1146	FS workplan	No

TABLE 3-4
STSIU SOIL pCu VALUES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Location	Copper mg/kg	pH SU	pCu (calculated[1])	Latitude	Longitude	Source	Pre-white rain value for boder
STS-PCUG-2011-17	994	5.10	4.15	32.7046	-108.1025	FS workplan	No
STS-PCUG-2011-18	1540	5.3	3.83	32.7122	-108.1140	FS workplan	No
STS-PCUG-2011-19	1210	3.90	2.80	32.6925	-108.1046	FS workplan	No
STS-PCUG-2011-2	876	6.50	5.59	32.7022	-108.0842	FS workplan	No
STS-PCUG-2011-20	520	4.10	3.96	32.6784	-108.0920	FS workplan	No
STS-PCUG-2011-21	558	4.80	4.53	32.7079	-108.0973	FS workplan	No
STS-PCUG-2011-22	976	7.4	6.31	32.7124	-108.1416	FS workplan	No
STS-PCUG-2011-23	551	5.80	5.48	32.7173	-108.1003	FS workplan	No
STS-PCUG-2011-24	1000	4.2	3.30	32.7102	-108.1057	FS workplan	No
STS-PCUG-2011-25	706	4.6	4.07	32.7077	-108.1046	FS workplan	No
STS-PCUG-2011-27	438	6.9	6.76	32.7170	-108.1461	FS workplan	No
STS-PCUG-2011-28	959	7.5	6.42	32.7162	-108.1389	FS workplan	No
STS-PCUG-2011-29	671	5.2	4.69	32.7185	-108.1033	FS workplan	No
STS-PCUG-2011-3	587	4.80	4.47	32.7013	-108.0765	FS workplan	No
STS-PCUG-2011-30	1500	7.4	5.81	32.7145	-108.1375	FS workplan	No
STS-PCUG-2011-31	304	4.30	4.76	32.6517	-108.0845	FS workplan	No
STS-PCUG-2011-32	420	3.80	3.93	32.6499	-108.0784	FS workplan	No
STS-PCUG-2011-33	273	6.7	7.12	32.6474	-108.0717	FS workplan	No
STS-PCUG-2011-34	364	4.00	4.28	32.6541	-108.0766	FS workplan	No
STS-PCUG-2011-35	287	5.50	5.95	32.6723	-108.0848	FS workplan	No
STS-PCUG-2011-36	270	5.60	6.11	32.6723	-108.0703	FS workplan	No
STS-PCUG-2011-37	244	6.90	7.44	32.6612	-108.0815	FS workplan	No
STS-PCUG-2011-38	350	3.90	4.23	32.6613	-108.0740	FS workplan	No
STS-PCUG-2011-39	360	4.70	4.94	32.6637	-108.0668	FS workplan	No
STS-PCUG-2011-4	794	4.60	3.94	32.7150	-108.0941	FS workplan	No
STS-PCUG-2011-40	312	3.80	4.27	32.6532	-108.0693	FS workplan	No
STS-PCUG-2011-41	587	3.30	3.08	32.6377	-108.0806	FS workplan	No
STS-PCUG-2011-5	458	5.8	5.69	32.7215	-108.1193	FS workplan	No
STS-PCUG-2011-6	290	5.00	5.47	32.6900	-108.0677	FS workplan	No
STS-PCUG-2011-7	387	7.7	7.65	32.7153	-108.1545	FS workplan	No
STS-PCUG-2011-8	449	5.8	5.71	32.7204	-108.1148	FS workplan	No
STS-PCUG-2011-9	246	4.80	5.47	32.6858	-108.0816	FS workplan	No
STS-RWU-2011-1	338	5.20	5.48	32.7124	-108.1083	Appendix C	No
STS-RWU-2011-10	96	4.6	6.37	32.6748	-108.0840	Appendix C	No
STS-RWU-2011-11	216	4.3	5.16	32.6747	-108.0920	Appendix C	No
STS-RWU-2011-12	316	3.9	4.35	32.6642	-108.0870	Appendix C	No
STS-RWU-2011-13	305	5.6	5.97	32.6768	-108.0940	Appendix C	No
STS-RWU-2011-14	1640	5.3	3.76	32.7081	-108.1150	Appendix C	No
STS-RWU-2011-15	1640	5.7	4.13	32.7092	-108.1180	Appendix C	No
STS-RWU-2011-16	395	4.9	5.02	32.7048	-108.0850	Appendix C	No
STS-RWU-2011-17	654	4.6	4.16	32.6762	-108.0960	Appendix C	No
STS-RWU-2011-2	381	4.10	4.32	32.7045	-108.1050	Appendix C	No
STS-RWU-2011-3	998	5.10	4.14	32.7076	-108.1070	Appendix C	No
STS-RWU-2011-4	427	7.20	7.07	32.7123	-108.1430	Appendix C	No
STS-RWU-2011-5	779	4.60	3.96	32.7067	-108.0950	Appendix C	No
STS-RWU-2011-6	1300	7.30	5.88	32.7085	-108.1209	Appendix C	No
STS-RWU-2011-7	529	4.90	4.69	32.6972	-108.1060	Appendix C	No
STS-RWU-2011-8	287	5.60	6.04	32.7103	-108.0939	Appendix C	No
STS-RWU-2011-9	560	4.4	4.15	32.6959	-108.1000	Appendix C	No
STS-RWU-2012-B1	182	4.6	5.63	32.6714	-108.0445	Appendix C	No
STS-RWU-2012-B2	344	4.7	4.99	32.6714	-108.0423	Appendix C	No
STS-RWU-2012-B3	161	4.7	5.87	32.6738	-108.0449	Appendix C	No
STS-SS-2010-016	1211	4.9	3.73	32.7070	-108.1121	FS workplan	No
STS-SS-2010-017	2227	6	4.06	32.6971	-108.1080	FS workplan	No
STS-SS-2010-018	1162	6	4.80	32.7039	-108.1083	FS workplan	No
West Amendment Plot	1767	7.68	5.96	32.7059	-108.1378	Appendix A	No
Wildlife Reference Plot North	213	5.90	6.66	32.6840	-108.0677	Appendix C	No
Wildlife Reference Plot South	288	4.60	5.11	32.6748	-108.0601	Appendix C	No
ERA16	77	6.10	8.02	32.6108	-108.1969	Appendix B	yes
ERA162	153	6.49	7.59	32.7654	-108.1026	Appendix B	Yes
ERA163	146	6.95	8.08	32.7691	-108.1083	Appendix B	Yes
ERA164	95	5.62	7.33	32.7435	-108.0096	Appendix B	Yes
ERA165	124	6.90	8.21	32.7491	-108.0258	Appendix B	Yes

TABLE 3-4
STSIU SOIL pCu VALUES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Location	Copper mg/kg	pH SU	pCu (calculated[1])	Latitude	Longitude	Source	Pre-white rain value for boder
ERA17	57	5.63	7.93	32.6131	-108.1921	Appendix B	yes
ERA18	73	6.07	8.04	32.6141	-108.1868	Appendix B	yes
ERA19	62	6.68	8.80	32.6093	-108.1838	Appendix B	yes
ERA20	45	7.73	10.15	32.6089	-108.1854	Appendix B	yes
ERA21	48	6.20	8.65	32.6080	-108.1875	Appendix B	yes
ERA25	70	7.73	9.64	32.6729	-108.0461	Appendix B	yes
ERA27	328	5.77	6.04	32.6183	-108.0861	Appendix B	Yes
ERA28	1060	7.53	6.34	32.7472	-108.1298	Appendix B	Yes
ERA31	78	7.73	9.53	32.5797	-108.0458	Appendix B	yes
ERA33	176	6.60	7.53	32.7655	-108.1161	Appendix B	yes
S64	482	7.49	7.20	32.7494	-108.1323	Appendix B	Yes
S65	462	4.78	4.73	32.7437	-108.1310	Appendix B	Yes
S66	552	6.61	6.23	32.7387	-108.1315	Appendix B	Yes
S78	207	7.79	8.45	32.6222	-108.1271	Appendix B	yes
S79	157	7.95	8.92	32.6221	-108.1108	Appendix B	yes
SS100	164	6.17	7.21	32.7632	-108.0651	Appendix B	yes
SS101	144	6.95	8.09	32.7608	-108.0469	Appendix B	yes
SS103	348	4.52	4.81	32.7443	-108.1389	Appendix B	Yes
SS104	285	5.70	6.14	32.7511	-108.1130	Appendix B	Yes
SS107	136	5.53	6.84	32.7332	-108.0754	Appendix B	Yes
SS108	176	6.62	7.55	32.7350	-108.0302	Appendix B	yes
SS113	146	6.93	8.05	32.7371	-108.0612	Appendix B	yes
SS114	83	6.92	8.69	32.7278	-108.0340	Appendix B	yes
SS119D	125	6.10	7.46	32.7224	-108.0570	Appendix B	yes
SS120	83	7.18	8.93	32.7066	-108.0350	Appendix B	yes
SS123	314	5.74	6.07	32.6995	-108.0382	Appendix B	Yes
SS148	442	3.96	4.02	32.6256	-108.0813	Appendix B	Yes
SS149	440	8.16	7.93	32.6248	-108.0724	Appendix B	yes
SS150	424	8.06	7.88	32.6248	-108.0590	Appendix B	yes
SS151	181	7.97	8.77	32.6170	-108.1193	Appendix B	yes
SS152	166	8.24	9.13	32.6131	-108.1027	Appendix B	yes
SS153	307	6.78	7.06	32.6115	-108.0862	Appendix B	yes
SS154	260	7.75	8.15	32.6133	-108.0732	Appendix B	yes
SS155	271	8.10	8.43	32.6136	-108.0593	Appendix B	yes
SS156	137	5.06	6.39	32.5993	-108.0860	Appendix B	Yes
SS157	99	8.09	9.58	32.5990	-108.0725	Appendix B	yes
SS158	173	7.98	8.84	32.5993	-108.0582	Appendix B	yes
SS97	288	5.97	6.38	32.7519	-108.1471	Appendix B	Yes
SS98	333	5.97	6.21	32.7474	-108.1250	Appendix B	Yes
SS99	65	5.77	7.91	32.7586	-108.0924	Appendix B	yes
T-09	581	7.14	6.66	32.6283	-108.0801	Appendix B	Yes
T-12	194	7.78	8.52	32.6081	-108.0947	Appendix B	yes
U04-1019	221	5.94	6.66	32.6957	-108.0365	Appendix B	yes
U04-1020	392	4.63	4.78	32.6977	-108.0457	Appendix B	Yes
U04-1021	252	5.76	6.34	32.6886	-108.0381	Appendix B	Yes
U04-1032	936	7.92	6.84	32.7048	-108.1562	Appendix B	Yes
U04-1033	506	8.78	8.34	32.6976	-108.1560	Appendix B	yes
U04-1034	382	8.65	8.55	32.6892	-108.1566	Appendix B	yes

Notes:
mg/kg = milligram per kilogram
SU = standard unit
[1] used upland pCu equation from NewFields 2005, applied all points in table to pCu contours developed with natural neighbor method.
All samples taken from the 0-6" bgs interval or adjusted to 0-6" interval with sieving at < 2 mm (see Table E-1 in Appendix B)

TABLE 3-5
ERROR MATRICES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Rangeland Condition Classification[1]

	Observed			
Classified	**Unacceptable**	**Acceptable**	**User's Accuracy**	**Error of Comission**
Unacceptable	2	0	**100%**	**0%**
Acceptable	1	5	**83%**	**17%**
Producer's Accuracy	**67%**	**100%**		
Error of Omission	**33%**	**0%**		

Overall Accuracy: **88%**

1. Based on a comparison of 2011 ground-verified OAT scores on 200-m transect that were independent of training dataset (1/4 of total dataset was not used for training) compared to majority classified rangeland class within the 200 m x 200 m area. Training dataset had 74% overall accuracy (18% error of commission), and all data produced 74% accuracy.

Vegetation Cover Classification[2]

	Observed			
Classified	**Unacceptable**	**Acceptable**	**User's Accuracy**	**Error of Comission**
Unacceptable	9	5	**64%**	**36%**
Acceptable	3	14	**82%**	**18%**
Producer's Accuracy	**75%**	**74%**		
Error of Omission	**25%**	**26%**		

Overall Accuracy: **74%**

2. Based on a comparison of 2011 ground visit assessed vegetative cover independent of process of developing the mapped rangeland polygons of cover.

Vegetation Richness Classification[3]

	Observed			
Classified	**Unacceptable**	**Acceptable**	**User's Accuracy**	**Error of Comission**
Unacceptable	16	5	**76%**	**24%**
Acceptable	4	6	**60%**	**40%**
Producer's Accuracy	**80%**	**55%**		
Error of Omission	**20%**	**45%**		

Overall Accuracy: **71%**

3. Based on a comparison of 2011 ground visit assessed vegetative richness independent of process of develping mapped rangeland polygons of richness.

TABLE 3-6
VALIDATION SITE RESULTS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Location	Soil Category Observed	Soil Category Classified	Rangeland Condition (OAT)		Vegetation Cover		Vegetation Richness	
			Observed	Classified	Observed	Classified	Observed	Classed
STS-PT-2013-1	Flat Rocky	Flat Rocky	Unacceptable	Unacceptable	Acceptable	Acceptable	Unacceptable	Acceptable
STS-PT-2013-2	Flat Rocky	Slope > 13%	Unacceptable	Unacceptable	Acceptable	Acceptable	Unacceptable	Unacceptable
STS-PT-2013-5	Slope > 13%	Slope > 13%	Acceptable	Acceptable	Acceptable	Acceptable	Unacceptable	Acceptable
STS-PT-2013-9	Bedrock	Bedrock	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-PT-2013-12	Bedrock	Bedrock	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
STS-PT-2013-17	Flat Rocky	Flat Rocky	Unacceptable	Unacceptable	Acceptable	Unacceptable	Unacceptable	Unacceptable
STS-PT-2013-19	Flat Rocky	Flat Rocky	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-PT-2013-20	Flat Granular	Flat Granular	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
STS-RWU-2012-B1	Bedrock	Flat Rocky	Acceptable	Unacceptable	Acceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2012-B2	Bedrock	Flat Rocky	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Acceptable	Unacceptable
STS-RWU-2012-B3	Bedrock	Slope > 13%	Acceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2011-1	Bedrock	Bedrock	Unacceptable	Unacceptable	Unacceptable	Acceptable	Unacceptable	Unacceptable
STS-RWU-2011-2	Bedrock	Bedrock	Unacceptable	Unacceptable	Acceptable	Acceptable	Unacceptable	Unacceptable
STS-RWU-2011-3	Slope > 13%	Flat Granular	Acceptable	Acceptable	Acceptable	Acceptable	Unacceptable	Acceptable
STS-RWU-2011-4	Flat Granular	Flat Granular	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
STS-RWU-2011-5	Flat Granular	Flat Rocky	Acceptable	Unacceptable	Acceptable	Unacceptable	Acceptable	Unacceptable
STS-RWU-2011-6	Slope > 13%	Slope > 13%	Unacceptable	Acceptable	Unacceptable	Acceptable	Unacceptable	Unacceptable
STS-RWU-2011-7	Flat Rocky	Bedrock	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2011-8	Slope > 13%	Slope > 13%	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
STS-RWU-2011-9	Bedrock	Bedrock	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2011-10	Flat Granular	Flat Rocky	Unacceptable	Unacceptable	Acceptable	Unacceptable	Acceptable	Unacceptable
STS-RWU-2011-11	Bedrock	Bedrock	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2011-12	Flat Rocky	Flat Rocky	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2011-13	Flat Granular	Flat Rocky	Unacceptable	Unacceptable	Acceptable	Unacceptable	Unacceptable	Unacceptable
STS-RWU-2011-14	Slope > 13%	Slope > 13%	Acceptable	Acceptable	Unacceptable	Acceptable	Unacceptable	Acceptable
STS-RWU-2011-15	Flat Granular	Flat Rocky	Unacceptable	Unacceptable	Acceptable	Acceptable	Acceptable	Acceptable
STS-RWU-2011-16	Flat Granular	Bedrock	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
STS-RWU-2011-17	Flat Rocky	Flat Granular	Unacceptable	Acceptable	Acceptable	Acceptable	Unacceptable	Unacceptable
Overgrazed Reference	Flat Rocky	Flat Rocky	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable	Unacceptable
Wildlife reference plot S	Flat Granular	Flat Rocky	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Unacceptable
Wildlife reference plot N	Flat Granular	Flat Rocky	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Unacceptable

Bolded are independent data used to assess OAT score accuracy.

TABLE 3-7

Soil categories to exclude or include for further evaluation based on their Probable Effect Levels (PELs)

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Soil category	PEL	Minimum pCu of retained polygons	Below PEL and include for remediation?
Flat Rocky	4.60	3.58	**Yes, include**
Slope > 13%	2.97	3.58	No, exclude
Bedrock	3.83	3.99	No, exclude
Flat Granular	2.97	3.84	No, exclude

TABLE 4-1
SURFACE WATER CRITERIA EVALUATION FOR DISSOLVED CADMIUM - EPHEMERAL WATERSHEDS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Stream Location	Year	Hardness (mg/L)	Dissolved Cd (µg/L)	Acute Criteria (µg/L)	Acute Hardness HQ
Lampbright Draw Watershed					
Lampbright Draw					
ERA 25	2000	187	1.5	2.82	0.53
ERA 45	2000	202	1.5	3.01	0.50
Sub-Watershed A					
A-Drainage					
STS-WS-2010-A2	2010	32	0.2	0.63	0.32
STS-WS-2010-A4	2010	30	0.1	0.60	0.17
Sub-Watershed B					
B-Drainage					
WER-1-7	2011	108	0.1	1.77	0.06
STS-WS-2010-B-3	2010	111	0.1	1.81	0.06
Sub-Watershed C					
C-1 Drainage (upgradient of Bolton Canyon Confluence)					
STS-WS-2010-C-3	2010	57	0.1	1.02	0.10
WER-1-6	2011	54	0.1	0.98	0.10
WER-2-6	2011	47	0.1	0.87	0.11
C-1 Drainage (downgradient of Bolton Canyon Confluence)					
STS-WS-2010-C-1	2010	62	0.2	1.10	0.18
STS-WS-2010-C-2	2010	53	0.1	0.96	0.10
WER-1-5	2011	64	0.2	1.14	0.18
BD4W-1-2004	2004	68	1.2	1.19	**1.01**
BD4W-1-2007	2007	70	0.6	1.22	0.49
C-2 Drainage					
ERA37	2000	103	1.5	1.69	0.89
WER-1-BD	2011	66	0.1	1.16	0.09
Sub-Watershed D					
D-1 Drainage					
WER-1-D1-2	2011	52	0.1	0.95	0.11
WER-1-D1	2011	27	0.1	0.54	0.19
WER-2-D12	2011	57	0.1	1.02	0.10
STS-WS-2010-D1-2	2010	56	0.1	1.01	0.10
D-2 Draiange					
WER-1-D2-1	2011	44	0.1	0.82	0.12
WER-D2-2	2011	55	0.1	0.99	0.10
STS-WS-2010-D2-1	2010	47	0.1	0.87	0.11
D-3 Drainage					
CDW-1-2004	2004	53	1.5	0.97	**1.55**
CDW-1-2007	2007	35	1.3	0.67	**1.93**
ERA38	2000	94	5.6	1.57	**3.57**
Sub-Watershed G					
G-Drainage					

TABLE 4-2
SURFACE WATER CRITERIA EVALUATION FOR DISSOLVED CADMIUM - NON-EPHEMERAL WATERSHEDS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Stream Location	Year	Hardness (mg/L)	Dissolved Cd (µg/L)	Acute Criteria (µg/L)	Acute Hardness HQ
Lucky Bill Canyon					
WER-1-2	2011	81	0.1	1.38	0.07
WER-1-1	2011	91	0.1	1.52	0.07
WER-2-1	2011	97	0.1	1.61	0.06
STS-CA-2010-004	2010	93	0.1	1.55	0.06
SW01-2007	2007	46	0.1	0.85	0.12
SW02-2007	2007	63	0.1	1.11	0.09
SW03-2007	2007	95	0.1	1.58	0.06
SW01-2006	2006	69	0.3	1.21	0.25
SW02-2006	2006	255	0.3	3.67	0.08
SW03-2006	2006	223	0.3	3.27	0.09
Martin Canyon					
STS-CA-2010-008	2010	139	0.1	2.19	0.05
STS-WS-2010-MC	2010	141	0.1	2.21	0.05
SW06A-2007	2007	25	0.1	0.51	0.20
SW07-2006	2006	90	0.2	1.51	0.13
SW07-2007	2007	97	0.1	1.61	0.06
SW08-2006	2006	152	0.2	2.36	0.08
SW08-2007	2007	109	0.1	1.78	0.06
WER-1-10	2011	258	0.1	3.70	0.03
WER-1-9	2011	86	0.1	1.45	0.07
WER-2-9	2011	86	0.1	1.45	0.07
WER-MC-1	2011	105	0.1	1.73	0.06
Rustler Canyon					
STS-CA-2010-001	2010	73	0.1	1.26	0.08
SW05-2006	2006	345	1.4	4.75	0.29
SW05-2007	2007	365	3.8	4.97	0.76
SW06-2006	2006	41	0.3	0.77	0.39
SW09-2006	2006	130	0.2	2.06	0.10
SW09-2007	2007	119	0.1	1.92	0.05
SW-10-2006	2006	89	0.2	1.49	0.13
SW10-2007	2007	74	0.1	1.28	0.08
SW-210-2006	2006	89	0.2	1.50	0.13
WER-1-12	2011	74	0.1	1.28	0.08
WER-1-RCS1	2011	45	0.1	0.83	0.12
WER-1-RCS2	2011	40	0.1	0.76	0.13
WER-1-RCS3	2011	67	0.1	1.17	0.09
WER-2-12	2011	69	0.1	1.20	0.08

TABLE 4-3
STOCK TANK CRITERIA EVALUATION FOR DISSOLVED CADMIUM

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Stock Tank Location	Stock Tank ID #	Year	Hardness (mg/L)	Qualifier	Dissolved Cd (µg/L)	Acute Criteria (µg/L)	Acute Hardness HQ
Sub Drainage A							
STS-CA-2010-006	T15[1]	2010	37		0.10	0.71	0.14
SW-4-2004	T16	2004	46	<	0.10	0.85	0.12
SW-13-2006	T16	2006	48	<	0.20	0.89	0.22
SW13-2007	T16	2007	74	<	0.10	1.28	0.08
STS-WS-2010-A1	T16	2010	114		0.10	1.85	0.05
Stock Tank ERA41	T25	2000	43	<	1.50	0.80	**1.86**
SW-1-2004	T25	2004	70	<	0.10	1.22	0.08
SW-12-2006	T25	2006	37	<	0.20	0.71	0.28
SW12-2007	T25	2007	54	<	0.10	0.98	0.10
STS-WS-2010-A3	T25	2010	78		0.10	1.34	0.07
Stock Tank ERA40	T26[1]	2000	45	<	1.50	0.83	**1.81**
SW-2-2004	T26[1]	2004	62	<	0.10	1.10	0.09
SW-11-2006	T26[1]	2006	41	<	0.20	0.78	0.26
SW11-2007	T26[1]	2007	42	<	0.10	0.79	0.13
SW-3-2004	T60[1]	2004	25	<	0.10	0.51	0.20
SW-14-2006	T60[1]	2006	27		0.39	0.54	0.72
SW14-2007	T60[1]	2007	26		0.10	0.52	0.19
Sub Drainage B							
Stock Tank ERA39	T34	2000	192	<	1.50	2.88	0.52
SW-5-2004	T34	2004	47	<	0.10	0.86	0.12
SW15-2006	T34	2006	46		0.31	0.86	0.36
SW15-2007	T34	2007	57	<	0.10	1.02	0.10
STS-WS-2010-B-2	T34	2010	145		0.10	2.27	0.04
Sub Drainage C							
STS-WS-2010-C-4	T29[1]	2010	21		0.10	0.44	0.23
Sub Drainage D							
STS-WS-2010-D1-3	T53	2010	61		0.10	1.08	0.09
ST-D12-2	T53	2011	56	<	0.10	1.02	0.10
STS-WS-2010-D1-1	P54	2010	76		0.10	1.31	0.08
Sub Drainage G							
ST-G8	T36	2011	94	--	--	1.57	--
ST-G8-2	T36	2011	122	<	0.10	1.95	0.05
West Drainage							
SW-6-2004	T06	2004	96	<	0.10	1.59	0.06
SW04-2006	T06	2006	54	<	0.30	0.98	0.31
SW04-2007	T06	2007	83		0.10	1.41	0.07
ST-E-2	T06	2011	55	<	0.10	0.99	0.10

1. Stock tank was removed between 2013 and 2022 as part of ongoping rangeland improvements.

TABLE 4-4
WATER-EFFECT RATIOS (WER) USED TO EVALUATE THE NATURE AND EXTENT OF COPPER CONTAMINATION

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Sample ID	Sub-Watershed	WER
Round 1 Samples		
WER 1-1	Lucky Bill	6.651
WER 1-2	Lucky Bill	5.334
WER 1-5[a]	Lower C-1 Drainage	--
WER 1-6	Upper C-1 Drainage	14.407
WER 1-7	B Drainage	4.717
WER 1-9	Martin Canyon	2.207
WER 1-10	Martin Canyon	2.804
WER 1-11	G-drainage	5.956
WER 1-12	Rustler Canyon	0.989
WER 1-RCS	Rustler Canyon	3.273
WER D1-2	D-1 Drainage	13.104
WER D2-1b	D-2 Drainage	8.027
Round 2 Samples		
WER 2-1	Lucky Bill	4.046
WER 2-6	Upper C-1 Drainage	6.151
WER 2-9	Martin Canyon	11.530
WER 2-11	G-drainage	6.889
WER 2-12	Rustler Canyon	2.251
WER 2-D12	D-1 Drainage	5.724
	Geometric mean all STSIU WERs =	**5.003**

Notes:

a. WER not derived based on results of toxicity test and WER guidance.

TABLE 4-5
SURFACE WATER CRITERIA EVALUATION FOR DISSOLVED COPPER - EPHEMERAL WATERSHEDS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Stream Location	Year	Hardness (mg/L)	Dissolved Cu (µg/L)	Acute Hardness-based Criterion (µg/L)	Acute Hardness-based HQ	WER-based Acute HQ^1	WER-based Acute HQ^2
Lampbright Draw Watershed							
Lampbright Draw							
ERA 25	2000	187	15	24.24	0.62	0.13	0.12
ERA 45	2000	202	10.8	26.07	0.41	0.09	0.08
Sub-Watershed A							
A-Drainage							
STS-WS-2010-A2	2010	32	73.9	4.63	**15.97**	**3.39**	
STS-WS-2010-A4	2010	30	25	4.38	**5.71**	**1.21**	**1.14**
Sub-Watershed B							
B-Drainage							
WER-1-7	2011	108	43	14.47	**2.97**	0.63	0.59
STS-WS-2010-B-3	2010	111	35.8	14.84	**2.41**	0.51	0.48
Sub-Watershed C							
C-1 Drainage (upgradient of Bolton Canyon Confluence)							
STS-WS-2010-C-3	2010	57	23.4	7.91	**2.96**	0.31	0.59
WER-1-6	2011	54	57.4	7.55	**7.60**	0.81	**1.52**
WER-2-6	2011	47	30.2	6.63	**4.55**	0.48	0.91
C-1 Drainage (downgradient of Bolton Canyon Confluence)							
STS-WS-2010-C-1	2010	62	34.8	8.57	**4.06**	0.43	0.81
STS-WS-2010-C-2	2010	53	36.6	7.39	**4.95**	0.53	0.99
WER-1-5	2011	64	32.3	8.88	**3.64**	0.39	0.73
BD4W-1-2004	2004	68	207	9.37	**22.09**	**2.35**	**4.42**
BD4W-1-2007	2007	70	80	9.60	**8.33**	0.88	**1.67**
C-2 Drainage							
ERA37	2000	103	64.8	13.82	**4.69**	0.50	0.94
WER-1-BD	2011	66	94.1	9.08	**10.37**	**1.10**	**2.07**
Sub-Watershed D							
D-1 Drainage							
WER-1-D1-2	2011	52	32.3	7.26	**4.45**	0.51	0.89
WER-1-D1	2011	27	21.1	3.88	**5.44**	0.63	**1.09**
WER-2-D12	2011	57	17.9	7.92	**2.26**	0.26	0.45
STS-WS-2010-D1-2	2010	56	25	7.78	**3.21**	0.37	0.64
D-2 Drainage							
WER-1-D2-1	2011	44	32.8	6.23	**5.26**	0.66	**1.05**
WER-D2-2	2011	55	18.8	7.61	**2.47**	0.31	0.49
STS-WS-2010-D2-1	2010	47	20	6.63	**3.02**	0.38	0.60
D-3 Drainage							
CDW-1-2004	2004	53	327	7.43	**44.03**	**5.28**	**8.80**
CDW-1-2007	2007	35	221	5.00	**44.22**	**5.30**	**8.84**
ERA38	2000	94	150	12.68	**11.83**	**1.42**	**2.36**
Sub-Watershed G							
Sub Drainage G							
WER-1-11	2011	164	4.3	21.40	0.20	0.03	0.04
WER-2-11	2011	119	7.9	15.81	0.50	0.08	0.10

Notes:

1. HQs adjusted using the WER determined in the sample's watershed, or nearest watershed. In cases where mutliple preliminary WERs were determined in a single watershed, the geometric mean of these WERs was calculated and used as a watershed-specific WER. A summary of preliminary watershed-specific WERs is provided below:

Sub-watershed B	4.717
Sub-watershed C	9.414
Sub-watershed D-1	8.661
Sub-watersged D-2	8.027
Sub-watershed G	6.406

2. HQs adjusted using the STSIU geometric mean WER (5.003) presented in Table 4-4.

TABLE 4-6
SURFACE WATER CRITERIA EVALUATION FOR DISSOLVED COPPER - NON-EPHEMERAL WATERSHEDS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Stream Location	Year	Hardness (mg/L)	Dissolved Cu (µg/L)	Acute Hardness-based Criterion (µg/L)	Acute Hardness-based HQ	Chronic Hardness-based Criterion (µg/L)	Chronic Hardness-based HQ	WER-based Chronic HQ[1]	WER-based Chronic HQ[2]
Lucky Bill Canyon									
WER-1-2	2011	81	6.5	11.01	0.59	7.47	0.87	0.17	0.17
WER-1-1	2011	91	5.9	12.29	0.48	8.26	0.71	0.14	0.14
WER-2-1	2011	97	3.4	13.03	0.26	8.71	0.39	0.07	0.08
STS-CA-2010-004	2010	93	3.3	12.55	0.26	8.42	0.39	0.07	0.08
SW01-2007	2007	46	19.3	6.47	**2.98**	4.61	**4.18**	0.80	0.84
SW02-2007	2007	63	13.9	8.70	**1.60**	6.03	**2.30**	0.44	0.46
SW03-2007	2007	95	14.5	12.81	**1.13**	8.57	**1.69**	0.32	0.34
SW01-2006	2006	69	15.3	9.52	**1.61**	6.55	**2.34**	0.45	0.47
SW02-2006	2006	255	5	32.50	0.15	19.95	0.25	0.05	0.05
SW03-2006	2006	223	20.9	28.57	0.73	17.75	**1.18**	0.22	0.24
Martin Canyon									
STS-CA-2010-008	2010	139	13.1	18.33	0.71	11.87	**1.10**	0.27	0.22
STS-WS-2010-MC	2010	141	14.1	18.58	0.76	12.01	**1.17**	0.28	0.23
SW06A-2007	2007	25	30.1	3.64	**8.27**	2.74	**10.99**	**2.65**	**2.20**
SW07-2006	2006	90	15.1	12.20	**1.24**	8.20	**1.84**	0.44	0.37
SW07-2007	2007	97	8.1	13.06	0.62	8.73	0.93	0.22	0.19
SW08-2006	2006	152	5	19.95	0.25	12.81	0.39	0.09	0.08
SW08-2007	2007	109	4.7	14.58	0.32	9.64	0.49	0.12	0.10
WER-1-10	2011	258	5.4	32.79	0.16	20.11	0.27	0.06	0.05
WER-1-9	2011	86	7.1	11.67	0.61	7.88	0.90	0.22	0.18
WER-2-9	2011	86	13.7	11.60	**1.18**	7.84	**1.75**	0.42	0.35
WER-MC-1	2011	105	8.1	14.11	0.57	9.36	0.87	0.21	0.17
Rustler Canyon									
STS-CA-2010-001	2010	73	2.7	9.99	0.27	6.84	0.39	0.20	0.08
SW05-2006	2006	345	55	43.21	**1.27**	25.83	**2.13**	**1.10**	0.43
SW05-2007	2007	365	1220	45.52	**26.80**	27.08	**45.06**	**23.24**	**9.01**
SW06-2006	2006	41	19.7	5.76	**3.42**	4.15	**4.74**	**2.45**	0.95
SW09-2006	2006	130	9.1	17.16	0.53	11.18	0.81	0.42	0.16
SW09-2007	2007	119	11	15.83	0.69	10.39	**1.06**	0.55	0.21
SW-10-2006	2006	89	4.1	12.00	0.34	8.08	0.51	0.26	0.10
SW10-2007	2007	74	2.6	10.12	0.26	6.92	0.38	0.19	0.08
SW-210-2006	2006	89	2.5	12.09	0.21	8.14	0.31	0.16	0.06
WER-1-12	2011	74	2.1	10.12	0.21	6.92	0.30	0.16	0.06
WER-1-RCS1	2011	45	5	6.27	0.80	4.49	**1.11**	0.57	0.22
WER-1-RCS2	2011	40	5.3	5.70	0.93	4.11	**1.29**	0.66	0.26
WER-1-RCS3	2011	67	2.2	9.21	0.24	6.36	0.35	0.18	0.07
WER-2-12	2011	69	3.6	9.42	0.38	6.49	0.55	0.29	0.11

Notes:

1. HQs adjusted using the WER determined in the sample's watershed, or nearest watershed. In cases where mutliple preliminary WERs were determined in a single watershed, the geometric mean of these WERs was calculated and used as a watershed-specific WER. A summary of watershed-specific WERs is provided below:

Lucky Bill Canyon	5.236
Martin Canyon	4.148
Rustler Canyon	1.939

2. HQs adjusted using the STSIU geometric mean WER (5.003) presented in Table 4-4.

TABLE 4-7
STOCK TANK SURFACE WATER CRITERIA EVALUATION FOR DISSOLVED COPPER

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Stock Tank Location	Stock Tank ID #	Year	Hardness (mg/L)	Dissolved Cu (µg/L)	Acute Criteria (µg/L)	Acute Hardness HQ	WER-Adjusted Acute HQ^1	WER-Adjusted Acute HQ^2
Sub Drainage A								
STS-CA-2010-006	T15^3	2010	37	47.00	5.27	**8.92**	**1.89**	**1.78**
						Geomean=	**1.89**	**1.78**
SW-4-2004	T16	2004	46	37.10	6.48	**5.72**	**1.21**	**1.14**
SW-13-2006	T16	2006	48	49.50	6.79	**7.29**	**1.55**	**1.46**
SW13-2007	T16	2007	74	45.60	10.12	**4.51**	0.96	0.90
STS-WS-2010-A1	T16	2010	114	33.10	15.20	**2.18**	0.46	0.44
T16 Stock Tank	T16	2021	98	37.50	13.15	**2.90**	0.61	0.58
						Geomean=	0.95	0.82
Stock Tank ERA41	T25	2000	43	28.60	6.07	**4.71**	1.00	0.94
SW-1-2004	T25	2004	70	43.60	9.62	**4.53**	0.96	0.91
SW-12-2006	T25	2006	37	51.40	5.28	**9.74**	**2.07**	**1.95**
SW12-2007	T25	2007	54	45.80	7.52	**6.09**	**1.29**	**1.22**
STS-WS-2010-A3	T25	2010	78	40.80	10.63	**3.84**	0.81	0.77
						Geomean=	**1.16**	**1.09**
Stock Tank ERA40	T26^3	2000	45	25.60	6.27	**4.08**	0.87	0.82
SW-2-2004	T26^3	2004	62	51.40	8.59	**5.98**	**1.27**	**1.20**
SW-11-2006	T26^3	2006	41	48.70	5.86	**8.31**	**1.76**	**1.66**
SW11-2007	T26^3	2007	42	39.70	5.93	**6.69**	**1.42**	**1.34**
						Geomean=	**1.29**	**1.21**
SW-3-2004	T60^3	2004	25	38.00	3.65	**10.41**	**2.21**	**2.08**
SW-14-2006	T60^3	2006	27	51.80	3.94	**13.15**	**2.79**	**2.63**
SW14-2007	T60^3	2007	26	48.70	3.78	**12.89**	**2.73**	**2.58**
						Geomean=	**2.56**	**2.42**
Sub Drainage B								
Stock Tank ERA39	T34	2000	192	28.00	24.85	**1.13**	0.24	0.23
SW-5-2004	T34	2004	47	60.60	6.54	**9.26**	**1.96**	**1.85**
SW15-2006	T34	2006	46	72.10	6.52	**11.06**	**2.34**	**2.21**
SW15-2007	T34	2007	57	52.20	7.91	**6.60**	**1.40**	**1.32**
STS-WS-2010-B-2	T34	2010	145	73.90	19.07	**3.87**	0.82	0.77
						Geomean=	**1.05**	0.99
Sub Drainage C								
STS-WS-2010-C-4	T29^3	2010	21	53.10	3.09	**17.19**	**1.83**	**3.44**
						Geomean=	**1.83**	**3.44**
Sub Drainage D								
STS-WS-2010-D1-3	T53	2010	61	33.60	8.44	**3.98**	0.46	0.80
ST-D12-2	T53	2011	56	44.10	7.85	**5.62**	0.65	**1.12**
						Geomean=	0.55	0.95
STS-WS-2010-D1-1	T54	2010	76	13.00	10.38	**1.25**	0.14	0.25
						Geomean=	0.14	0.25
Sub Drainage G								
ST-G8	T36	2011	94	--	12.69	--	--	--
ST-G8-2	T36	2011	122	2.30	16.18	0.14	0.02	0.03
						Geomean=	0.02	0.03
West Drainage							**--**	
SW-6-2004	T06	2004	96	95.40	12.89	**7.40**	--	**1.48**
SW04-2006	T06	2006	54	220.00	7.51	**29.30**	--	**5.86**
SW04-2007	T06	2007	83	129.00	11.28	**11.44**	--	**2.29**
ST-E-2	T06	2011	55	79.00	7.60	**10.39**	--	**2.08**
T06 Stock Tank	T06	2021	139	113.00	18.27	**6.20**		**1.24**
T06 Stock Tank	T06	2022	90	142.00	12.22	**11.60**		**2.32**
						Geomean=	**--**	**2.20**

1. HQs adjusted using the WER determined in the sample's watershed, or nearest watershed. In cases where mutliple WERs were determined in a single watershed, the geometric mean of these WERs was calculated and used as a watershed-specific WER. A summary of watershed-specific WERs is provided below:

2. HQs adjusted using the STSIU geometric mean WER (5.003) presented in Table 4-4.

Sub-watershed B	4.717
Sub-watershed C	9.414
Sub-watershed D-1	8.661
Sub-watersged D-2	8.027
Sub-watershed G	6.406

3. Stock tank was removed between 2013 and 2022 as part of ongoping rangeland improvements.

TABLE 5-1
SOIL REMEDIAL TECHNOLOGIES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

NO.	REMEDIAL TECHNOLOGY	DESCRIPTION	PRELIMINARY SCREENING			CONCLUSION
			EFFECTIVENESS	IMPLEMENTABILITY	COST	
1	No Action	No further active response actions.	Contaminants will naturally attenuate over time. Does not provide additional mechanisms to prevent contaminant exposure to site receptors.	Is considered implementable.	There are no cost associated with no action.	Being retained for baseline comparison of remedial technologies.
2	Monitoring	No further active response actions. Monitoring will be conducted to prove the occurrence of natural remediation.	Contaminants will naturally attenuate over time. Does not provide additional mechanisms to prevent contaminant exposure to site receptors.	Is considered implementable.	Costs are associated with types of monitoring (quantitative and/or qualitative) and monitoring duration selected.	Being retained for evaluation as a part of a remedial alternative.
3	Excavation and Reuse	Excavation and onsite management includes removal of contaminated soils with heavy construction equipment and hand removal techniques. Excavated soils will be managed onsite at the waste rock stockpiles or reused in the adjacent operational areas as cover for the tailings ponds.	Is considered highly effective at reducing the presence of site contaminants.	Is considered to be generally technically implementable with the exception of certain areas of the site that are more difficult to access with equipment and personnel due to terrain conditions.	Costs include equipment use and maintenance, material handling and transport, and backfill materials and activities. Costs are considered less than Excavation and Disposal option because offsite transportation and disposal is not needed. Long term O&M costs are considered to be low.	Not being retained for remedial alternatives at this time.
3a	Excavation and Disposal	Excavation and disposal includes removal of contaminated soils with heavy construction equipment and hand removal techniques. Excavated soils will be characterized to determine final offsite disposition.	Is considered highly effective at reducing the presence of site contaminants.	Excavation is considered to be generally technically implementable with the exception of certain areas of the site that are more difficult to access with equipment and personnel due to terrain conditions. Offsite transportation is not considered to be economical to a permitted facility that could accept the soils. Therefore the offsite transportation and disposal is considered to have low implementability.	Costs include equipment use and maintenance, material handling and transport, backfill materials and activities, characterization, and offsite transportation and disposal. Long term O&M costs are considered to be low.	Not being retained for remedial alternatives at this time.
4	Soil Amendments					
4a	Limestone and Organic Matter	5-Year amendment study tested combinations of lime slurry and organic matter, and tilling applications. Plant coverage, pH, and soil chemistry were monitored.	After the white rain already improved many areas on the site, liming may not improve a plant community or reduce uptake into plants unless pH < 2. Organic matter amendments did not improve the plant community and contributed to proliferation of weeds toxic to wildlife. Plant communities on steep slopes > 13% were degraded by the amendments.	This technology has been demonstrated to be implementable via the ongoing amendment study. This technology may be less implementable at certain areas of the site that are not readily accessible by equipment.	Costs are moderate and include purchase and transport of amendments to the site, and equipment for application. Minimal soil handling is required as soils generally remain in place, minimizing transportation and disposal costs. Long term O&M costs are considered low to moderate.	Being retained for evaluation as a part of a remedial alternative.
4b	Tilling or Ripping	5-Year amendment study tested combinations of lime slurry and organic matter, and tilling applications. Plant coverage, pH, and soil chemistry were monitored. Tilling de-compacts soil and provides additional dilution of metals and has potential to raise alkaline pH conditions to more neutral pH conditions pending existing pH levels within the soil treatment area being tilled. Plant coverage, pH, and soil chemistry would be monitored post-tilling operations.	Tilling is most effective in compacted soils (e.g., flat rocky habitats). Is potentially effective at raising alkaline pH conditions and making contaminants less bioavailable to site receptors without the introduction of lime and/or organic matter, as observed on the haul road that was ripped.	This technology has been demonstrated to be implementable via the ongoing amendment study. This technology may be less implementable at certain areas of the site that are not readily accessible by equipment for tilling (i.e., areas with too steep of a slope, > 13%)	Tilling includes increased efforts and costs as compared to adding lime and organic matter without tilling. However, minimal soil handling is required as soils generally remain in place, minimizing transportation and disposal costs compared to excavation and soil cover. Long term O&M costs are considered low to moderate.	Being retained for evaluation as a part of a remedial alternative.
4c	Ferrihydrite	Ferrihydrite is mixed into the impacted soils to reduce the copper bioavailability to site receptors.	Effectiveness would be determined via conducting a pilot treatability study and potentially bench scale treatability study to determine the loading rate of ferrihydrite or if other amendments such as lime or magnesium oxide (MgO) would be beneficial in buffering the pH. Because iron is being introduced to the soils, evaluations would be conducted to verify that the iron levels are acceptable from a human health and ecological perspective.	This technology is considered to be implementable, based on the ongoing soil amendment study which has demonstrated that soil mixing is feasible. A pilot treatability study would be required to determine the most effective soil mixing technique.	Cost will depend on soil mixing technique determined and market value of the amendment materials. The overall technology is considered to have moderate costs and is comparable to the costs of the lime and OM amendments being tested as part of the Amendment Study. Long term O&M are considered low to moderate.	Not being retained for further evaluation.
4d1	Use of Chelating Agent: Soil Washing (Ex-Situ)	Ex-situ soil washing includes removal of contaminants from soil using separation methodologies, including "washing" the soils with a detergent and/or chelating agent solution. The resulting clean portions of soil can be returned to the site for reuse and the resulting wash mixture and contaminated soil fines would be characterized for final disposition.	Is potentially effective at removing copper from soil. However, level of effectiveness would have to be verified via a pilot treatability study.	A pilot treatability study would be required to determine implementability. Factors to consider to evaluate implementability include, but are not limited to, accessibility of soil washing materials (e.g., water source) and equipment to areas of remediation.	Ex-Situ soil washing is labor intensive and requires a high level of soil handling (excavation, washing, soil replacement). Requires disposal of used wash solution and potentially portions of soil. Cost savings include utilizing remediated soil for onsite reuse, reducing imported backfill required.	Not being retained for further evaluation.
4d2	Use of Chelating Agent: Soil Washing (In-Situ)	In-situ soil washing includes introducing a chelating agent into the soil. The objective of the chelating agent is to mobilize the copper within the soil column. The copper becomes soluble within the groundwater and the groundwater is subsequently extracted for treatment and/or disposal with a groundwater extraction system.	Is potentially effective at removing copper from soil. However, level of effectiveness would have to be verified via a pilot treatability study.	Due to the large areas needing remediation and lack of current infrastructure to support a groundwater extraction system, this is considered to have low implementability. However, a pilot treatability study would be required to determine implementability.	In-Situ soil washing is labor intensive and requires the introduction of the chelating agent into the soils, installation of groundwater extraction system, and extracted groundwater treatment and/or disposal. Costs for construction and future O&M activities are considered very high.	Not being retained for further evaluation.

TABLE 5-1
SOIL REMEDIAL TECHNOLOGIES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

NO.	REMEDIAL TECHNOLOGY	DESCRIPTION	PRELIMINARY SCREENING			CONCLUSION
			EFFECTIVENESS	IMPLEMENTABILITY	COST	
4d3	Use of Chelating Agent: Phytoextraction	Phytoextraction includes the planting of specified seeds and plants to uptake the contaminants through the root system into the plant tissue. The plants are then harvested on a regular basis to remove the contaminants from the site. A chelating agent can be applied to the soil to increase the rate of contaminant uptake into the plants.	Is potentially effective at removing copper from soil. Phytoaccumulation of contaminants in seeds and vegetation has potential to directly expose site receptors to contaminants. The effectiveness of contaminant removal is directly dependent on the success of the plants and the rate of contaminant uptake.	A pilot treatability study would be required to determine implementability. Factors to evaluate implementability include, but are not limited to, types of seeds and vegetation, harvesting and replanting schedule, chelating agent, and rate of contaminant uptake.	Initial costs are considered low to moderate and include costs of seeds/plants, chelating agent, and planting. O&M is considered high due to the long term harvesting and replanting schedule, maintenance of the plants, and disposal of the plant waste. Costs are considered moderate to high as compared to other technologies.	Not being retained for further evaluation.
5a	Soil Cover	A soil cover involves isolating impacted soils from potential site receptors. The soil cover would consist of clean soil and would be constructed over soils with copper levels above the site RAC to serve as a physical barrier between contaminated soils and site receptors. In addition, the cover could be constructed in areas of exposed bedrock to create pre-existing habitat for site receptors.	Is effective at protecting site receptors from underlying contaminants. Contaminants will remain onsite requiring ICs to restrict future intrusive activity practices. Maintenance of BMPs is considered critical to maintain the integrity and effectiveness of the soil cover.	Is considered to be generally technically implementable with the exception of certain areas of the site that are more difficult to access with equipment and personnel due to terrain conditions.	Costs are considered moderate as compared to soil excavation and the soil amendment technologies. There are higher initial costs associated with soil handling and placement of the cover. However, there are no costs associated with excavation or soil amending. O&M costs related to maintaining the cover are considered moderate.	Being retained for evaluation as a part of a remedial alternative.
5b	Impermeable Cover	An impermeable cover, such as asphalt or concrete, placed over targeted impacted soils would greatly minimize or eliminate the potential for direct contact of site receptors with impacted site soils.	An impermeable cover would be effective at reducing exposure of site receptors to impacted soils. However, an impermeable cover would eliminate the vegetative landscape, potential for future grazing, and would impact surface water infiltration and stormwater runoff patterns.	Installation of an impermeable cover is generally considered implementable with exception of areas that are too steep and/or areas with varying topography that can not be graded to conditions that could accommodate the cover.	Costs include surface preparation and grading, and installation of the impermeable cover, including base materials. Costs are considered to be moderate as compared to other soil remedial technologies. Long term O&M costs are considered low.	Not being retained for further evaluation.
6	Surface Soil Controls: Phytostabilization	Surface soil controls includes stabilizing surface soils to prevent or lower airborne dispersion of impacted soils and provide erosion control. Phytostabilization is considered a method to stabilize the surface soils through revegetation. Phytostabilization consists of revegetating the impacted areas with plant species targeted at increasing long term stabilization as compared to existing vegetative conditions.	Phytostabilization has the potential to be effective at stabilizing the soils and reducing transport of impacted soils. However, this technology used alone would not be effective at reducing site contaminant levels and/or exposure to site receptors. This could be effectively be used in conjunction with other remedial technologies.	Revegetating soils with species that are targeted at soil stabilization is generally considered implementable at the Site. There may be certain areas of the site that may not support the phytostabilization species (due to slopes, percent soil coverage, and soil conditions). Plant species and potential locations would be determined during the remedial design process.	Costs include the costs of the individual plants, planting, and limited O&M. O&M is considered moderate the first 3 to 5 years, or until the vegetation is considered to be established. O&M is considered to be low once the vegetation has been established. Costs are considered moderate compared to other technologies.	Not being retained for further evaluation.
7	Phytoremediation	Phytoremediation consists of planting vegetation that can uptake the contaminants located in the soil and subsequently remediate the soils. Plants and/or trees would be selected that are able to bioaccumulate and/or degrade the site contaminants.	Phytoremediation is potentially effective at remediating site contaminants. Contaminant reduction would take several years to achieve and would not immediately reduce potential exposure to site receptors. A preliminary remedial design evaluation would be required to determine if the naturally existing conditions at the site (e.g., humidity, access to groundwater, soil conditions) could support phytoremediation plant species.	Assuming that the naturally occurring site conditions can support phytoremediation plant species, phytoremediation is generally considered implementable at the Site. There may be certain areas of the site that may not support the phytoremediation species (due to slopes, percent soil coverage, access to groundwater, and soil conditions).	Costs include the cost of the individual plants/trees, planting, and O&M. O&M is considered moderate to high, as remediation of the site contaminants is directly dependent on the success of the plants/trees to thrive over an extended period of time. Costs are considered moderate to high as compared to other technologies.	Not being retained for further evaluation as a standalone technology. Being retained as a potential component to another technology.
8	Electrokinetic Remediation	Electrokinetics is based on the principle that when direct current (DC) is passed through contaminated soil, certain (negatively charged) types of contaminants will migrate through the soil pore water to a place where they can be removed. This alternative uses electrode assemblies that are installed in the ground in a square array and connected to a DC voltage power supply. Each electrode assembly contains water, a pump, an electrode, and various controllers and sensors. The outer casing of the electrodes is made of porous ceramic through which the electrical current and contaminants pass. A vacuum is applied to the casings which keeps the water inside the assembly from flowing out and saturating adjacent soils.	Overall effectiveness of using electrokinetic remediation would need to be determined by conducting a pilot and potentially a bench scale treatability study. Factors that would be evaluated during the treatability studies would include, but would not be limited to, voltage rates, effectiveness in soils with low moisture content, and the increased acidity to the treated soil.	Electrokinetic remediation has not been tested at the site, so currently is considered low for implementablility. A pilot treatability study would need to be conducted to determine if the low soil moisture content in the soil would support the removal of copper and if the increased soil acidity would impact vegetative species.	The cost associated with electokinetic remediation is assumed to be moderate to high. Factors such as the spacing and number of electrodes would be determined during a pilot treatability study, could greatly impact the costs for this technology. Therefore, without the results of a pilot study the overall cost of implementation cannot be determined.	Not being retained for further evaluation

TABLE 5-2
SURFACE WATER REMEDIAL TECHNOLOGIES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

NO.	REMEDIAL TECHNOLOGY	DESCRIPTION	PRELIMINARY SCREENING			CONCLUSION
			EFFECTIVENESS	IMPLEMENTABILITY	COST	
1	No Action	No further active response actions for surface water.	Contaminants will naturally attenuate over time. Does not provide additional mechanisms to prevent contaminant exposure to site receptors.	Is considered implementable.	There are no costs associated with no action.	Being retained for baseline comparison of remedial technologies.
2	Monitoring	No further active response actions for surface water. Monitoring to be conducted to prove the occurence of natural remediation.	Contaminants will naturally attenuate over time. Does not provide additional mechanisms to prevent contaminant exposure to site receptors.	Is considered implementable.	Costs are associated with types of monitoring (quantitative and/or qualitative) and monitoring durations selected.	Being retained for evaluation as a part of a remedial alternative.
3	Excavation (In-Drainage, Upland, or Stock Ponds)	Excavation includes removing impacted in-drainage sediments and/or upland soils determined to be contributing to surface water impacts.	Is considered highly effective at reducing the presence of site contaminants.	Is considered to be generally technically implementable with the exception of certain areas of the site that are more difficult to access with equipment and personnel due to terrain conditions and presence of mature trees.	Costs include equipment use and maintenance, material handling and transport, and characterizaiton and final disposition. Long term O&M costs related to BMPs are considered to be low to moderate.	Being retained for evaluation as a part of a remedial alternative.
4	In-Stream Removal of Suspended Sediments	Consists of construction of settling basins within the stream drainage areas to allow for sediments to descend to bottom of the pool and accumulate. Accumulated impacted sediments would be removed by mechanical methods.	Is considered to be effective at capturing contaminated sediments. Settling pools currently exist on site and have demonstrated effectiveness in capturing contaminated sediments	Is considered to be technically implementable. Some portions of drainage areas may be restricted from construction of pools due to equipment accessibility restrictions.	Costs are considered to be moderate during construction of the settling pools. Long term O&M costs are considered to be moderate to high as compared to excavation and surface water treatment.	Being retained for evaluation as a part of a remedial alternative.
5	Limestone Treatment	Consists of installation of features, such as limestone, within the surface water drainage pathway. As the surface water passes over the feature (e.g., limestone) the pH is elevated, subsequently making the contaminants (copper) less bioavailable to site receptors.	Is considered effective at raising surface water pH as long as surface water makes contact with the limestone features.	Is considered to be technically implementable. Some portions of drainage areas may be restricted from installation of limestone features due to equipment accessibility restrictions.	Costs are considered to be high during construction of the limestone features. Long term O&M costs are considered to be low compared to excavation and in-stream removal of suspended sediments.	Being retained for evaluation as a part of a remedial alternative.
6	Alkaline Washing	Consists of insertion of alkaline fluid into the sediments and banks of the drainage. The alkaline wash will raise pH and sequester metals in the sediments, subsequently reducing mobilization of the contaminants (copper) to surface water.	Is considered effective at raising pH and lowering metals concentraitons in surface water as long as the majority of metals loading is coming from sediments.	Is considered to have low implementability. There are large infrastructure requirements and some portions of the drainage area may be restricted due equipment accessibility restrictions.	Costs are considered to be high both during the construction and O&M phases when compared to other remedial options.	Not being retained for evaluation as a part of a remedial alternative.
7	Sediment and Erosion Control	Consists of construction of ditches, berms, and other controls (e.g., sedimentation controls) to prevent surface water run-on to the impacted areas and run-off from the impacted areas.	Is considered effective at minimizing the transport of contaminants to and from the drainage areas and surface water.	Is considered to be technically implementable in the drainage area and upland portions of the Site with exception to areas that may be inaccessible to equipment and personnel.	Construction costs are considered to be low to moderate. Long term O&M costs associated with maintenance, repair, and replacement of controls are considered to be low to moderate compared to other surface water remedial technologies.	Being retained as a component of remedial alternatives.

TABLE 5-3
SUMMARY OF RETAINED REMEDIAL TECHNOLOGIES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

Soils	Surface Water
No Action	No Action
Monitoring	Monitoring
Excavation and Reuse	Excavation (In-drainage, Upland, or Stock Ponds)
Soil Amendments (Limestone, Organic Material)	In-stream Removal of Suspended Sediments
Tilling	Limestone Treatment
Soil Cover	Sediment and Erosion Control
Phytostabilization	

TABLE 6-1
REMEDIAL ALTERNATIVES FOR CONSIDERATION - SOILS (TOTAL METALS)

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

MEDIA	TECHNOLOGY TYPE	ALTERNATIVES					
		1 - NO ACTION	2 - MONITORING	3 - EXCAVATION AND MONITORING	4 - EXCAVATION	5 - CONTAINMENT	6 - SOIL AMENDMENTS
Upland Soils (Total Metals	No Action	X					
	Monitoring		X	X	X	X	X
	Lime and/or Organic Material						X
	Tilling						X
	Soil Cover					X	

TABLE 6-2
REMEDIAL ALTERNATIVES FOR CONSIDERATION - SOILS (pCu)

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

MEDIA	TECHNOLOGY TYPE	ALTERNATIVES					
		1 - NO ACTION	2 - MONITORING	3 - EXCAVATION	4 - TILLING	5 - SOIL AMENDMENTS	5 - PARTIAL EXCAVATION
Upland Soils (pCu)	No Action	X					
	Monitoring		X	X	X	X	X
	Excavation and Reuse			X	X		
	Lime and/or Organic Material						X
	Tilling					X	X
	Soil Cover						X

TABLE 6-3
REMEDIAL ALTERNATIVES FOR CONSIDERATION - SURFACE WATER DRAINAGES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

MEDIA	TECHNOLOGY TYPE	ALTERNATIVES				
		1 - NO ACTION	2 - MONITORING	3 - EXCAVATION AND MONITORING	4 - EXCAVATION, SEDIMENT CONTROL, LIMESTONE	5 - SEDIMENT AND EROSION CONTROL
SURFACE WATER	No Action	X				
	Monitoring		X	X	X	X
	Excavation (In-drainage, Upland, or Stock Ponds)			X	X	
	In-stream Removal of Suspended Sediments				X	
	Limestone Treatment				X	
	Sediment and Erosion Control					X

TABLE 6-4
REMEDIAL ALTERNATIVES FOR CONSIDERATION - SURFACE WATER STOCK TANKS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY

MEDIA	TECHNOLOGY TYPE	ALTERNATIVES			
		1 - NO ACTION	2 - MONITORING	3 - EXCAVATION	4 - EXCAVATION AND LIMESTONE
STOCK TANKS	No Action	X			
	Monitoring		X	X	X
	Excavation (In-drainage, Upland, or Stock Ponds)			X	X
	Removal of Suspended Sediments				
	Limestone Treatment				X
	Sediment and Erosion Control				

TABLE 7-1
DETAILED EVALUATION OF THE REMEDIAL ALTERNATIVES - SOILS (TOTAL METALS)

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY PROPOSAL

ALT	DESCRIPTION	OVERALL PROTECTION	COMPLIANCE WITH ARARs	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCTION OF TOXICITY, MOBILITY OR VOLUME	SHORT-TERM EFFECTIVENESS	IMPLEMENTABILITY	COST EFFECTIVENESS	NMED ACCEPTED	COMMUNITY ACCEPTANCE	GREEN REMEDIATION
1	No Action	Does not provide any form of overall protection of human health and the environment. Does not meet the RACs.	Is not compliant with ARARs.	Not effective in the long-term or permanent.	Does not reduce toxicity, mobility or volume.	Not effective in the short-term.	Is implementable at the site, as no action is required.	There are no costs associated with this alternative.	Not applicable at this time	Not applicable at this time	No additional resources would be required to implement this alternative.
2	Monitoring	The ability of the this alternative to satisfy this criterion is low, as copper concentrations are not anticipated to decrease over time.	The likelihood of compliance with the ARARs on an ongoing basis is low.	The effectiveness of this remedial alternative in the long-term is limited, although natural attenuation may lower copper in soils due to erosion and availability to wildlife due to depositon over time. It may not reduce concentrations to below human health of avian risk values. However, this alternative affords the opportunity to continue data collection and to take additional action if necessary.	Does not reduce toxicity, mobility, or volume, but may reduce accessibility if eroded from site or covered by soil deposition over time.	Not effective in the short-term.	This remedy is implementable at the site with limited additional effort.	Capital Costs: $147K O&M (NPV, 30 yr): $1.1MM TIC: $1.3MM			Emissions and fuel use would be limited to those associated with light vehicles and sample shipping/analysis. This alternative would save exisiting vegetation from destruction.
3	Excavation and Monitoring	Removal of all soil concentrations above RAC would satisfy all requirements for protecting human health and the environment.	Compliant with applicable standards.	Removal of contaminated soil would be effective long-term and would be permanent.	Reduces toxicity, mobility, and volume of the concentration of metals in surface soil. However, does not reduce the toxicity, volume, or mobility due to treatment.	This alternative is considered effective in the short-term. Normal risks associated with nuisance dust, noise, and traffic.	Based on the location of the human health and avian exposure units, excavation and monitoring is implementable. Since the concentrations of metals is limited to the top six-inches of soil, the amount of soil would be limited over the exposure areas. Monitoring of avian risk across exposure areas would be required.	Capital Costs: $9.0MM O&M (NPV,30yr): $1.2MM TIC: $10.2MM			Additional emissions and fuel use would be required to excavate the material from the exposure areas. The material would be reused and recycled. This alternative would result in destruction of existing vegetation.
4	Containment and Monitoring	Soil cover would eliminate direct human and avian contact with the contaminants. The pathways would only be closed if the soil cover remains in place. The soil cover could be breached by digging, construction, or similar activities. This could potentially pose a risk to human health or avian species.	Compliant with applicable standards.	A soil cover would require long-term operations, maintenance, and monitoring to continue to be effective. A soil cover would be considered a moderately effective solution.	The toxicity and volume of the material would not decrease with the addition of a soil cover. The mobility of the contaminants by either wind erosion, overland flow, or infiltration would be reduced.	This alternative is considered effective in the short-term, similar to Alternative 3.	The implementability of this alternative is similar to Alternative 3. The exception of this alternative is the long-term monitoring and maintenance that is required with this option.	Capital Costs: $23.0MM O&M (NPV,30yr): $1.2MM TIC: $24.2MM			Emissions and fuel use would be similar to Alternative 3 (hauling in clean cover and capping the impacted soil rather than excavating impacted soil and hauling to an operation area). This alternative would result in destruction of existing vegetation.
5	Soil Amendments and Monitoring	The remedy alternative does not address the risk from total metals concentrations. Therefore, it is not protective of human health or the environment.	The likelihood of compliance with ARARs on an going basis is low.	This remedy would not address long-term effectiveness of risk to human health and avian risk.	This liming remedy would reduce toxicity and the bioavailability of the metals, although the effectiveness is less after the white rain unless pH is low (e.g., < 2); the remedy would not address the direct contact or ingestion pathways. No benefit is expected from the organic matter application based on results of the amendment study.	Based on the results from the soil amendment study, this remedy would take several years to implement.	The implementability of this alternative is less than the implementability of the excavation or containment alternatives.	Capital Costs: $1.7MM O&M (NPV,30yr): $1.2MM TIC: $2.9MM			Emissions and fuel use would be lower than Alternatives 3 and 4. Similar equipment would be used to till in the lime, but far less lime would be required and the associated haulage would be vastly reduced. This alternative would result in destruction of existing vegetation.

TABLE 7-2
DETAILED EVALUATION OF THE REMEDIAL ALTERNATIVES - SOILS (pCu)

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY PROPOSAL

LTERNATIV	DESCRIPTION	OVERALL PROTECTION	COMPLIANCE WITH ARARs	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCTION OF TOXICITY, MOBILITY OR VOLUME	SHORT-TERM EFFECTIVENESS	IMPLEMENTABILITY	COST EFFECTIVENESS	NMED ACCEPTED	COMMUNITY ACCEPTANCE	GREEN REMEDIATION
1	No Action	Does not provide any form of overall protection for ecological receptors. Does not meet the RAOs.	Is not compliant with ARARs.	Not effective in the long-term or permanent.	Does not reduce toxicity, mobility, or volume.	Not effective in the short-term.	Is implementable at the site, as no action is required.	There are no costs associated with this alternative.	Not applicable at this time	Not applicable at this time	No additional resources would be required to implement this alternative.
2	Monitoring	The ability of this alternative to satisfy this criterion is low; however, due to the presence of naturally occurring calcium carbonate, natural attenuation may be occuring at the site. The rate of natural attenuation is currently unknown but was enhanced by the 2008 white rain.	The likelihood of compliance with the ARARs on an ongoing basis is low.	The effectiveness of this remedial alternative in the long-term is dependent on natural attenuation. A natural attenuation rate for the remediation of pCu has not be determined at this point. However, this alternative affords the opportunity to continue data collection and to take additional action if necessary.	Based on the amendment, pH and insect studies, the white rain in 2008 decreased cupric ion activity (increased pCu), reduced copper uptake into plants and thus reduced phytotoxicity, and improved plant richness.	A natural attenuation rate has not been determined for pCu. Improvements to pCu soils beyond the improvement in 2008 from the white rain are not anticipated in the short-term to meet RAOs.	This remedy is implementable at the site with limited additional effort.	Capital Costs: $357K O&M (NPV, 30 yr): $1.4MM TIC: $1.7MM			Emissions and fuel use would be limited to those associated with light vehicles and sample shipping/analysis. This alternative would save exisiting vegetation from destruction.
3	Excavation and Monitoring	Removal of low pCu soils would meet overall protection for ecological receptors.	Compliant with applicable standards.	The effectiveness of this remedial alternative in the long-term is high to increase pCu values. Once excavation of historically deposited soils are removed, the source of the material would be removed. Short term monitoring and sampling may be required to document that the excavation was sufficient.	Reduces toxicity, mobility, and volume of the concentration of pCu in surface soil. However, does not reduce the toxicity, volume, or mobility due to treatment.	This alternative is considered effective in the short-term. Normal risks associated with nuisance dust, noise, and traffic.	The implementability of this alternative is considered moderate compared to other alternatives. Excavation would not be implementable in areas of bedrock outcrops or steep slopes. The presence of these two physical factors limits the implementability of this alternative.	Capital Costs: $4.1MM O&M (NPV, 30 yr): $1.4MM TIC: $5.5MM			Additional emissions and fuel use would be required to excavate the material. The material would be reused and recycled. This alternative would result in destruction of existing vegetation.
4	Tilling and Monitoring	The ability of this alternative to satisfy this criterion is moderate. Natural attenuation rates for pCu have not been determined, but tilling would increase the rate of natural attenuation compared to monitoring only.	The likelihood of this alternative to meet the ARARs of an ongoing basis is considered moderate.	The long-term effectiveness of this alternative is considered moderate to increase pCu values.	This alternative would increase the amount of volume, by mixing the top soil layers with underlying soils. Mobility and toxicity may be reduced.	This alternative is considered moderately effective in the short-term. There is currently some but limited data regarding the effectiveness of tilling.	The implementability of this alternative is considered moderate. It has the same limitations as Alternative 3, and could not be used in areas of bedrock outcrops or steep slopes. Ths physical limitations of this alternative limit the overall effectiveness due to the limited application area.	Capital Costs: $1.2MM O&M (NPV, 30 yr): $1.4MM TIC: $2.6MM			Emissions and fuel use would be lower than Alternative 3. A medium-sized dozer with a ripper could implement this alternative with relatively lower fuel use and less support requirements. This alternative would result in destruction of existing vegetation.
5	Soil Amendments, Tilling, and Monitoring	The ability of the this alternative to satisfy this criterion is moderate. Natural attenuation rates for pCu have not been determined, but tilling would increase the rate of natural attenuation compared to monitoring only.	The likelihood of this alternative to meet the ARARs on an ongoing basis is considered moderate.	The long-term effectiveness of this alternative is considered moderate to high to increase pCu values. Lime (calcium carbonate) has been shown to increase pCu values at the site. However, additional applications of soil amendments may be required in bedrock outcrops or on steep slopes due to transportation of material from storm water flows.	This alternative would increase the amount of volume, by mixing the top soil layers with underlying soils. Mobility and toxicity should be reduced by addition of either lime, organic material, or other.	This alternative would be considered moderately effective in the short-term, as it may take several years for the soil amendments to increase the pCu values.	The implementability of soil amendments is considered high compared to the other alternatives. It is an alternative that could be applied to areas with steep slopes and bedrock outcrop areas, which cannot be addressed by physical means. Additional applications of soil amendments may be required in the future in bedrock outcrops or steep slopes due to the transporation of amendments in storm water.	Capital Costs: $1.9MM O&M (NPV, 30 yr): $1.4MM TIC: $3.3MM			Emissions and fuel use would be lower than Alternative 3 but higher than Alternative 4. This alternative would result in destruction of existing vegetation.
6	Partial Excavation, Soil Amendments, Tilling, and Monitoring	The overall protection of this alternative would be high, as it would address the largest area of pCu values of any of the alternatives.	The likelihood of this alternative to meet the ARARs on an ongoing basis is considered moderate to high.	The long-term effectivness for this alternative is considered to be high compared to the other alternatives. It addresses the largest area, removes source material, and minimizes the amount of long-term monitoring and maintenance.	Reduces toxicity, mobility, and volume of the concentration of cupric ion activity (increasing pCu) in surface soil from excavated areas. Soil amendment areas with lime in very low pH soils would reduce toxicity and potential mobility of remaining soils. Tilling would increase the volume of material, but would decrease the mobility and toxicity.	This alternative would be considered to be moderately effective in the short-term. It would address all of the pCu areas, and would have a high short-term effectiveness for the excavated areas.	The implementability of this alternative is considered the most difficult to implement almongst all of the alternatives. It has the highest area of implementation compared to other remedial alternatives. Amendments could be applied to areas with steep slopes and bedrock outcrop areas, but excavation would not be implementable in areas of bedrock outcrops or steep slopes.	Capital Costs: $2.9MM O&M (NPV, 30 yr): $1.4MM TIC: $4.3MM			This alternative would result in the highest emissions and fuel use of the six alternatives, as it is a combination of Alternatives 3 through 5. This alternative would result in destruction of existing vegetation.

TABLE 7-3
DETAILED EVALUATION OF THE REMEDIAL ALTERNATIVES - SURFACE WATER DRAINAGES

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY PROPOSAL

LTERNATIV	DESCRIPTION	OVERALL PROTECTION	COMPLIANCE WITH ARARs	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCTION OF TOXICITY, MOBILITY OR VOLUME	SHORT-TERM EFFECTIVENESS	IMPLEMENTABILITY	COST EFFECTIVENESS	NMED ACCEPTED	COMMUNITY ACCEPTANCE	GREEN REMEDIATION
1	No Action	Does not provide any form of overall protection of human health and the environment. Does not meet the RAOs.	Is not compliant with ARARs.	Not effective in the long-term or permanent.	Does not reduce toxicity, mobility, or volume.	Not effective in the short-term.	Is implementable at the site, as no action is required.	There is no costs associated with this alternative.	Not applicable at this time	Not applicable at this time	No additional resources would be required to implement this alternative.
2	Monitoring	The ability of this alternative to satisfy this criterion is low; however, long-term protection of aquatic receptors may be achieved if upstream sources of contaminants from either suspended sediments or dissolved metals concentrations in storm water flow are addressed. At this time, the loading rates or rates of contribution from either of these sources is unknown.	The likelihood of compliance with the ARARs on an ongoing basis is low to moderate, and is dependent on the management of upstream sources, suspended sediment and dissolve metals concentrations, as well as overall water quality.	The effectiveness of this remedial alternative in the long-term is limited to reduce concentrations to below aquatic life standards. However, it may be effective enough to address long-term risks if upstream sources of contaminants are addressed. Additionally, this alternative affords the opportunity to continue data collection and to take additional action if necessary.	Does not reduce toxicity, mobility, or volume.	Not effective in the short-term.	This remedy is implementable at the site with limited additional effort. Long-term monitoring would be required to show improvements in water quality in the surface water drainages.	Capital Costs: $130K O&M (NPV, 30 yr): $432K TIC: $587K			Emissions and fuel use would be limited to those associated with light vehicles and sample shipping/analysis. This alternative would save exisiting vegetation from destruction.
3	Excavation and Monitoring	This ability of this alternative to meet the overall protection of water quality is high to moderate. The overall protection is based on the removal of historical sediments, but also a reduction potential upstream contributors. The overall protection is also based on the alternatives selected in Table 7-2 and Table 7-4. Long-term monitoring is suggested for the implementation of this alternative.	The likelihood of compliance with the ARARs on an ongoing basis is moderate to high with this alternative. This is the potential for reduced long-term effectiveness of this alternative if upstream contribution continue. Additional excavation may be required at a future time.	The effectiveness of this remedial alternative in the long-term is high to moderate to reduce concentrations to aquatic life standards. Once excavation of historical sediments is complete, monitoring will be required to document that water quality criteria have been met. Long-term effectiveness of this alternative may be dependent on addressing upstream contributors (suspended sediments and storm water).	This alternative does not address toxicity reduction, but it does reduce the mobility of the contaminants by removing them from contact with surface water. The volume of material will be reduced and also prevent potential contamination of surface water due to the presence of historical sediments.	This alternative is considered moderately effective in the short-term. Surface water quality may take some time to improve. Normal risks associated with nuisance dust, excavation hazards, noise and traffic.	In specific surface water drainages this alternative will potentially be difficult to implement compared to other alternatives. Specifically in the Bolton Spring and Ash Spring corridor the excavation of historical sediments may do more harm than good to the ecological habitat. Additional permitting and coordination would be required compared to other alternatives. For other drainages the excavation of historical sediments is considered implementable. Some of the drainages may not be accessible to large equipment, due to steep slopes or tight access. However, overall this alternative is implementable at the site. No special equipment is required to complete this alternative. Equipment and materials to complete the job are readily available.	Capital Costs: 3.6MM O&M (NPV, 30 yr): $544K TIC: $4.1MM			Additional emissions and fuel use would be required to excavate the drainages. The constrained environment would also redcue efficiency. This alternative would result in destruction of existing vegetation.
4	Excavation, Sediment Control, Limestone Treatment, and Monitoring	The likelihood of compliance with the ARARs on an ongoing basis is high, and potentially higher than Alternative 3. There is the potential for reduced long-term effectiveness of this alternative if upstream contributions continue. Additional excavation should be anticipated within the sedimentation basins in the future. The addition of limestone to treat bioavailability of copper increases the potential compliance with ARARs.	The effectiveness of this remedial alternative in the long-term is high to moderate to reduce concentrations to aquatic life standards. Once excavation of historical sediments is complete and sedimentation basins with limestone treatment is added, monitoring will be required to document that water quality criteria have been met.	The effectiveness of this remedial alternative in the long-term is high to moderate to reduce concentrations to aquatic life standards. Once excavation of historical sediments with the installation is complete and sedimentation basins are installed to collect suspended sediment monitoring will be required to document that water quality criteria have been met. Overall long-term effectiveness will also depend on any additional potential upstream sources of contaminants. Chemical treatment of the surface would increase the potential effectiveness of this alternative compared to Alternative 3.	This alternative addresses toxicity by reducing the bioavailability of copper due to the presence of limestone in the sedimentation basins. It also reduces the mobility of the contaminants by removing them from contact with surface water. The volume of material will be reduced with this alternative and it will also prevent potential contamination of surface water due to the presence of historical sediments.	This alternative is considered moderately effective in the short-term. Surface water quality may take some time to improve. Normal risks associated with nuisance dust, excavation hazards, noise, and traffic.	In specific surface water drainages this alternative will be potentially difficult to implement compared to other alternatives. Specifically, in the Bolton Spring and Ash Spring corridor, the excavation of historical sediments may do more harm than good to the ecological habitat. Additional permitting and coordination would be required compared to other alternatives due to the excavation component. Specifically for the critical habitat transect, excavation may be omitted and only limestone sedimentation basins placed in the surface water drainages. For other drainages, the excavation of historical sediments is considered implementable. Some of the drainages may not be accessible to large equipment, due to steep slopes or tight access. These factors make the implementability of this alternative more challenging than other alternatives. No special equipment is required to complete this alternative. Equipment and materials to complete the job are readily available.	Capital Costs: $4.5MM O&M (NPV, 30 yr): $1.3MM TIC: $5.8MM			Emissions and fuel use would be higher than Alternative 3, as additional sediment control measures and treatment are added, both of which increase emissions and natural resource use through manufacturing, material hauling, and maintenance. This alternative would result in destruction of existing vegetation.
5	Sediment Control, Erosion Control, and Monitoring	The ability of this alternative to meet the overall protection of water quality is low to moderate. The overall protection of this alternative is based on the control of suspended sediments and potentially dissolved concentrations in storm water. This alternative does not address historical sediments. The addition of limestone as part of the BMPs to treat dissolved/bioavailable copper would increase the potential compliance with ARARs.	The ability of this alternative to comply with this criterion is low to moderate.	The long-term effectiveness of this alternative is low to moderate. A significant amount of maintenance and monitoring will be required to implement a large enough sediment and erosion control program across all of the drainages. Potential excavation and maintenance of the BMPs would be required on a regular basis to keep this alternative effective.	This alternative does not reduce the volume of material within the drainages. If limestone or other material is used, toxicity of the constituents may be reduced. Mobility of the constituents may be reduced.	This alternative would be low to moderately effective in the short-term. This alternative does not address the presence of historical seidments in the drainages. This alternative would take time for water quality to improve.	This alternative would be more difficult to implement compared to Alternatives 1-3, and as difficult to implement as Alternative 4. However, the erosion control measures would need to be implemented over a much larger area and would have to be monitored and maintained on a more frequent basis than Alternative 4.	Capital Costs: $4.6MM O&M (NPV, 30 yr): $4.4MM TIC: $9.0MM			This alternative would result in the highest emissions and fuel use of the five alternatives. Although excavation is removed as an activity, erosion control is added which comes with considerably more material use and maintenance. This alternative would result in destruction of existing vegetation.

TABLE 7-4
DETAILED EVALUATION OF THE REMEDIAL ALTERNATIVES - SURFACE WATER STOCK TANKS

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILING SOILS IU FEASIBILITY STUDY PROPOSAL

LTERNATIV	DESCRIPTION	OVERALL PROTECTION	COMPLIANCE WITH ARARs	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCTION OF TOXICITY, MOBILITY OR VOLUME	SHORT-TERM EFFECTIVENESS	IMPLEMENTABILITY	COST EFFECTIVENESS	NMED ACCEPTED	COMMUNITY ACCEPTANCE	GREEN REMEDIATION
1	No Action	Does not provide any form of overall protection of human health and the environment. Does not meet the RAOs.	Is not compliant with ARARs.	Not effective in the long-term or permanent.	Does not reduce toxicity, mobility, or volume.	Not effective in the short-term.	Is implementable at the site, as no action is required.	There is no costs associated with this alternative.	Not applicable at this time	Not applicable at this time	No additional resources would be required to implement this alternative.
2	Monitoring	The ability of the this alternative to satisfy this criterion is low; however, long-term protection of aquatic receptors may be achieved if upstream sources of contaminants are addressed.	The likelihood of compliance with the ARARs on an ongoing basis is low to moderate, depending on the management of upstream sources.	The effectiveness of this remedial alternative in the long-term is limited to reduce concentrations to below aquatic life standards. However, may be enough to address long-term risks if upstream sources of contaminants are addressed. Additionally, this alternative affords the opportunity to continue data collection and to take additional action if necessary.	Does not reduce toxicity, mobility, or volume.	Not effective in the short-term.	This remedy is implementable at the site with limited additional effort.	Capital Costs: $49K O&M (NPV, 30 yr): $82K TIC: $141K			Emissions and fuel use would be limited to those associated with light vehicles and sample shipping/analysis.
3	Excavation and Monitoring	Removal of historical sediments from stock tanks would address a major contributor to aquatic risk; however, there is still the potential for long-term risk to aquatic receptors due to upstream contribution from either suspended sediments or dissolve metals concentrations in surface water.	The likelihood of compliance with the ARARs on an ongoing basis is moderate to high with this alternative. There is the potential for reduced long-term effectiveness of this alternative if upstream contributions continue. Additional excavation may be required at a future time.	The effectiveness of this remedial alternative in the long-term is high to moderate to reduce concentrations to below aquatic life standards. Once excavation of historical sediments is complete, monitoring will be required to document that water quality criteria have been met.	This alternative does not address toxicity reduction, but it does reduce the mobility of the contaminants by removing them from the stock tanks and out of surface water. The volume of material will be reduced and also prevent potential contamination of surface water due to the presence of historical sediments.	This alternative is considered effective in the short-term. Normal risks associated with nuisance dust, excavation hazards, noise, and traffic. Coordination may need to be made to provide alternative water sources to tanks owners during construction.	Based on the location of the tanks and their accessibility, this alternative is implementable at the site. Equipment and materials to complete the job are readily available.	Capital Costs: $942K O&M (NPV, 30 yr): $82K TIC: $1.1MM			Additional emissions and fuel use would be required to excavate the material from the stock tanks and haul it to the operation area. The material would be reused and recycled.
4	Excavation, Limestone, and Monitoring	Removal of historical sediments from stock tanks would address a major contributor to aquatic risk, and limestone treatment from riprap or other material would decrease the bioavailability of copper for aquatic organisms. However, there is still the potential for long-term risk to aquatic receptors due to upstream contribution from either suspended sediments or dissolve metals concentrations in surface water.	The likelihood of compliance with the ARARs on an ongoing basis is high, and potentially higher than Alternative 3. There is the potential for reduced long-term effectiveness of this alternative if upstream contributions continue. Additional excavation may be required at a future time. The addition of limestone to treat bioavailability of copper is stock tanks increases the potential compliance with ARARs.	The effectiveness of this remedial alternative in the long-term is high to moderate to reduce concentrations to aquatic life standards. Once excavation of historical sediments is complete and limestone treatment is added, monitoring will be required to document that water quality criteria have been met.	This alternative decreases the toxicity of copper in surface water by potentially reducing the bioavailability of copper as well as removing historical sediments. This alternative also reduces the mobility of the contaminants by removing them from the stock tanks and out of surface water. The volume of material will be reduced and also prevent potential contamination of surface water due to the presence of historical sediments.	This alternative is considered effective in the short-term. Normal risks associated with nuisance dust, excavation hazards, noise, and traffic. Coordination may need to be made to provide alternative water sources to tanks owners during construction.	Based on the location of the tanks and their accessibility, this alternative is implementable at the site. Equipment and materials, including limestone riprap and/or blocks are readily available in the area to complete the job.	Capital Costs: $1.1MM O&M (NPV, 30 yr): $82K TIC: $1.2MM			This alternative would generate slightly more emissions and consume more fuel than Alternative 3 in that lime would need to be hauled to the stock tanks and spread using equipment.

Figures

AUTHOR: MB
PROJECT# B0063543.0000
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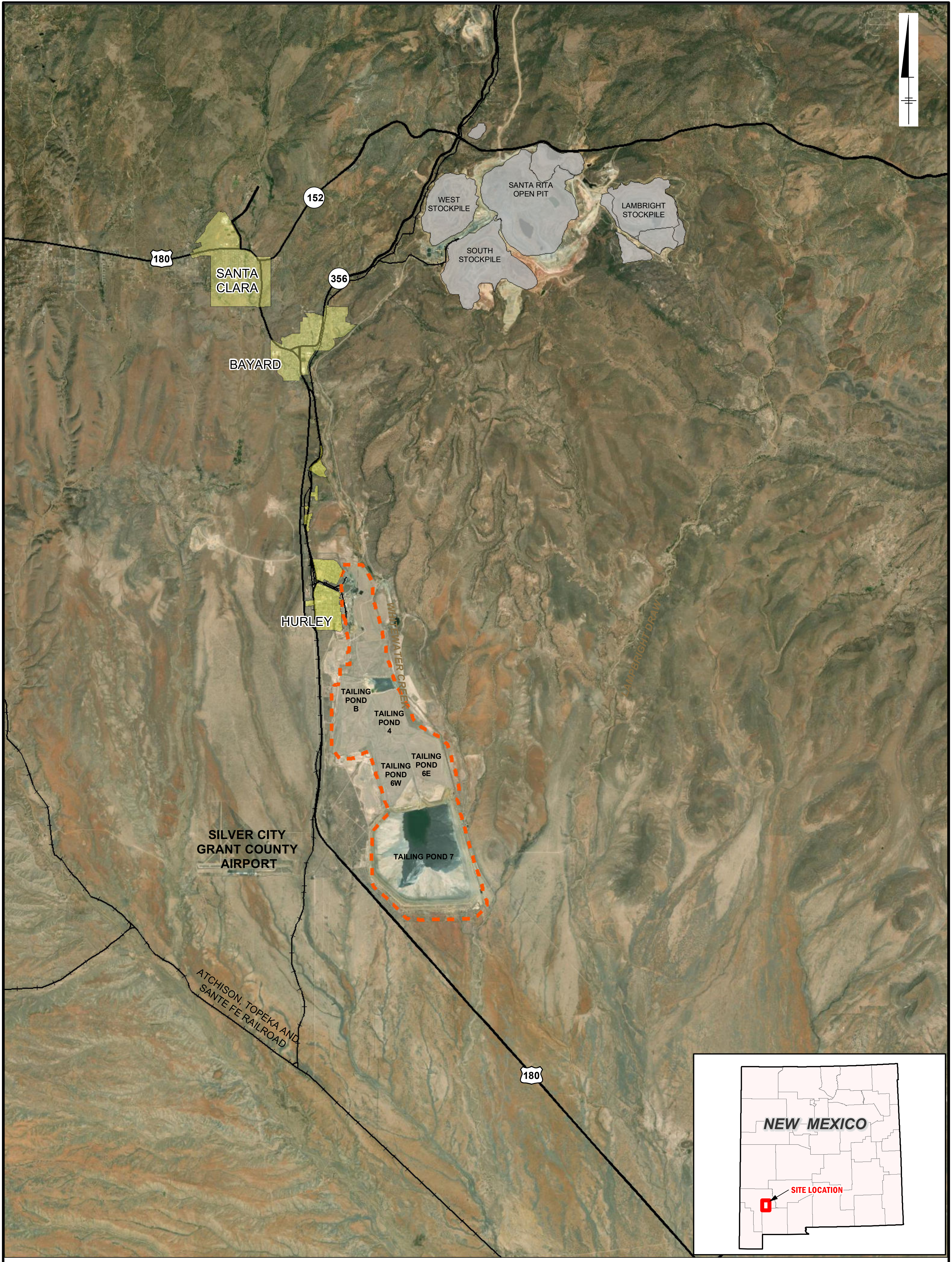

LEGEND:

▨	Stockpiles
🟨	Local City
⬚	Smelter Tailing boundary
—	Major Roads
┼	Railroad

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 1.5 3 Miles
GRAPHIC SCALE

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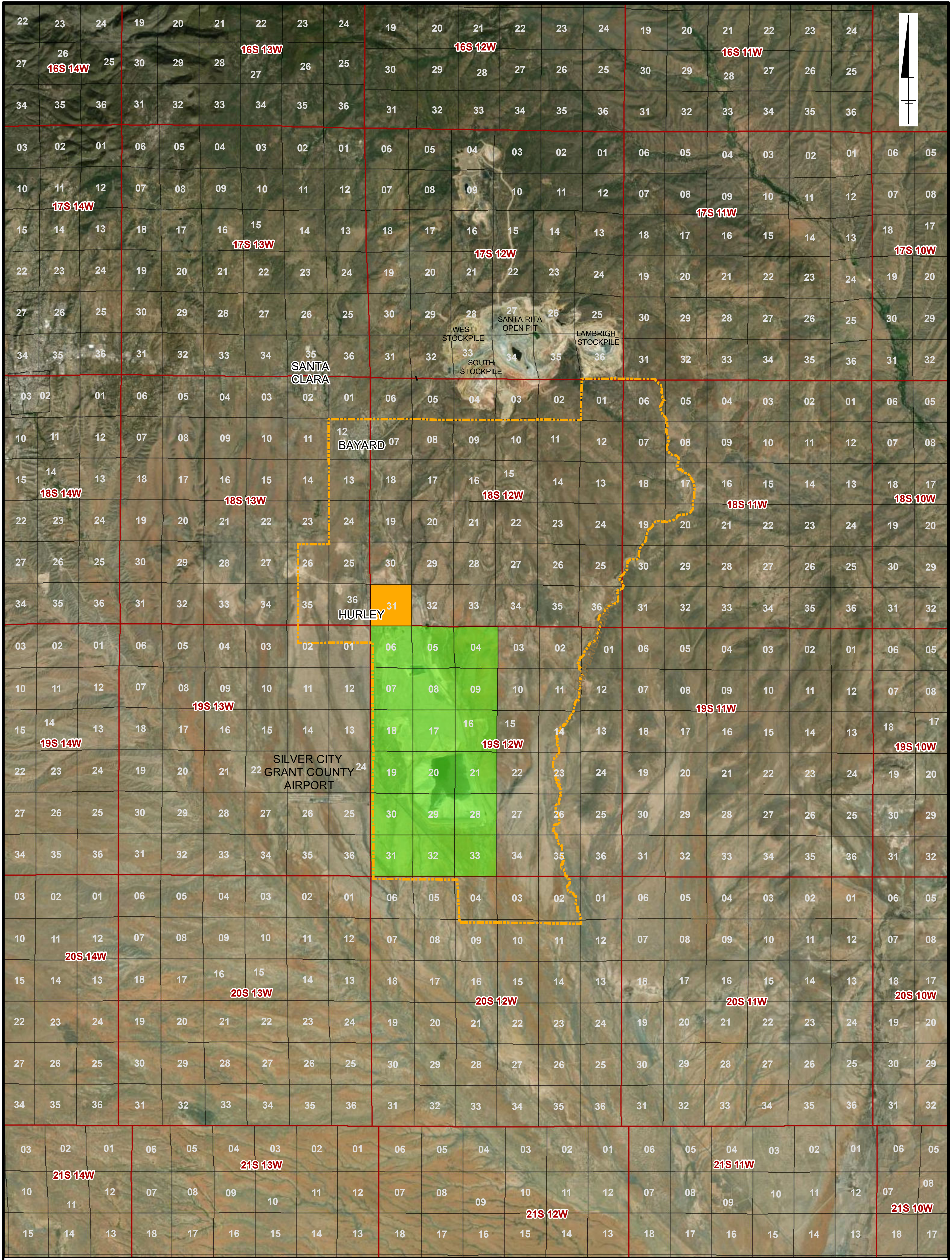
SMELTER/TAILINGS SOILS IU FS

SITE OVERVIEW

ARCADIS

FIGURE
1-1

AUTHOR: MB
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_2-01 STSIU Study Boundary and Investigation Area.mxd   Last Saved By: jchen   Last Saved On: 11/18/2022



LEGEND:

- STSIU Study Boundary
- 🟩 Tailing Impacted Soils Investigation Unit Sections
- 🟧 Smelter Investigation Unit Section
- Township-Range Boundaries
- Section Boundaries

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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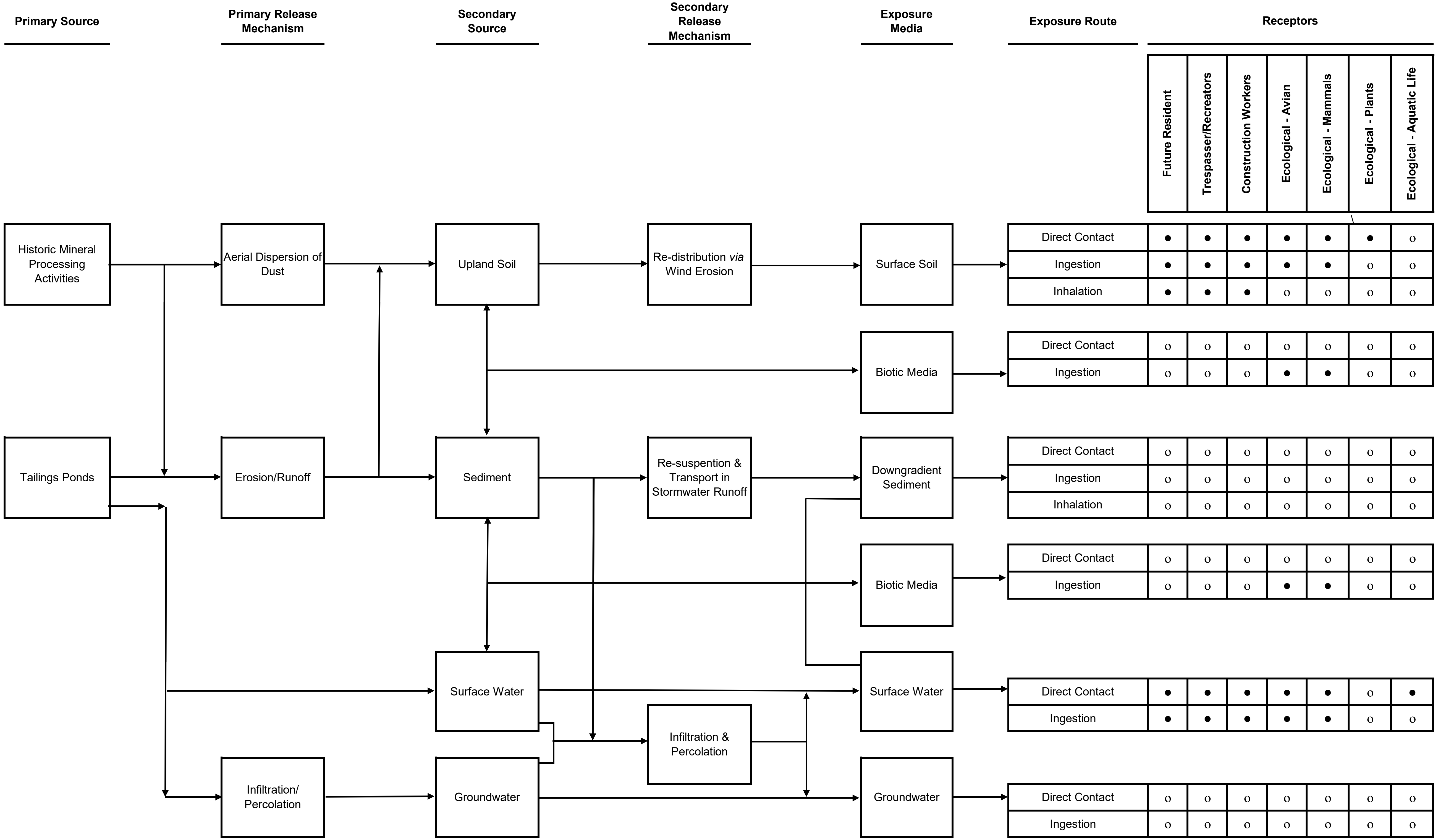
STSIU STUDY BOUNDARY AND INVESTIGATION AREA

ARCADIS

FIGURE
2-1



Exposure Media	Exposure Route	Future Resident	Trespasser/Recreators	Construction Workers	Ecological - Avian	Ecological - Mammals	Ecological - Plants	Ecological - Aquatic Life
Surface Soil	Direct Contact	●	●	●	●	●	●	o
	Ingestion	●	●	●	●	●	o	o
	Inhalation	●	●	●	o	o	o	o
Biotic Media	Direct Contact	o	o	o	o	o	o	o
	Ingestion	o	o	o	●	●	o	o
Downgradient Sediment	Direct Contact	o	o	o	o	o	o	o
	Ingestion	o	o	o	o	o	o	o
	Inhalation	o	o	o	o	o	o	o
Biotic Media	Direct Contact	o	o	o	o	o	o	o
	Ingestion	o	o	o	●	●	o	o
Surface Water	Direct Contact	●	●	●	●	●	o	●
	Ingestion	●	●	●	●	●	o	o
Groundwater	Direct Contact	o	o	o	o	o	o	o
	Ingestion	o	o	o	o	o	o	o

● Potentially complete exposure pathway
o Incomplete, or potentially complete but considered insignificant exposure pathway

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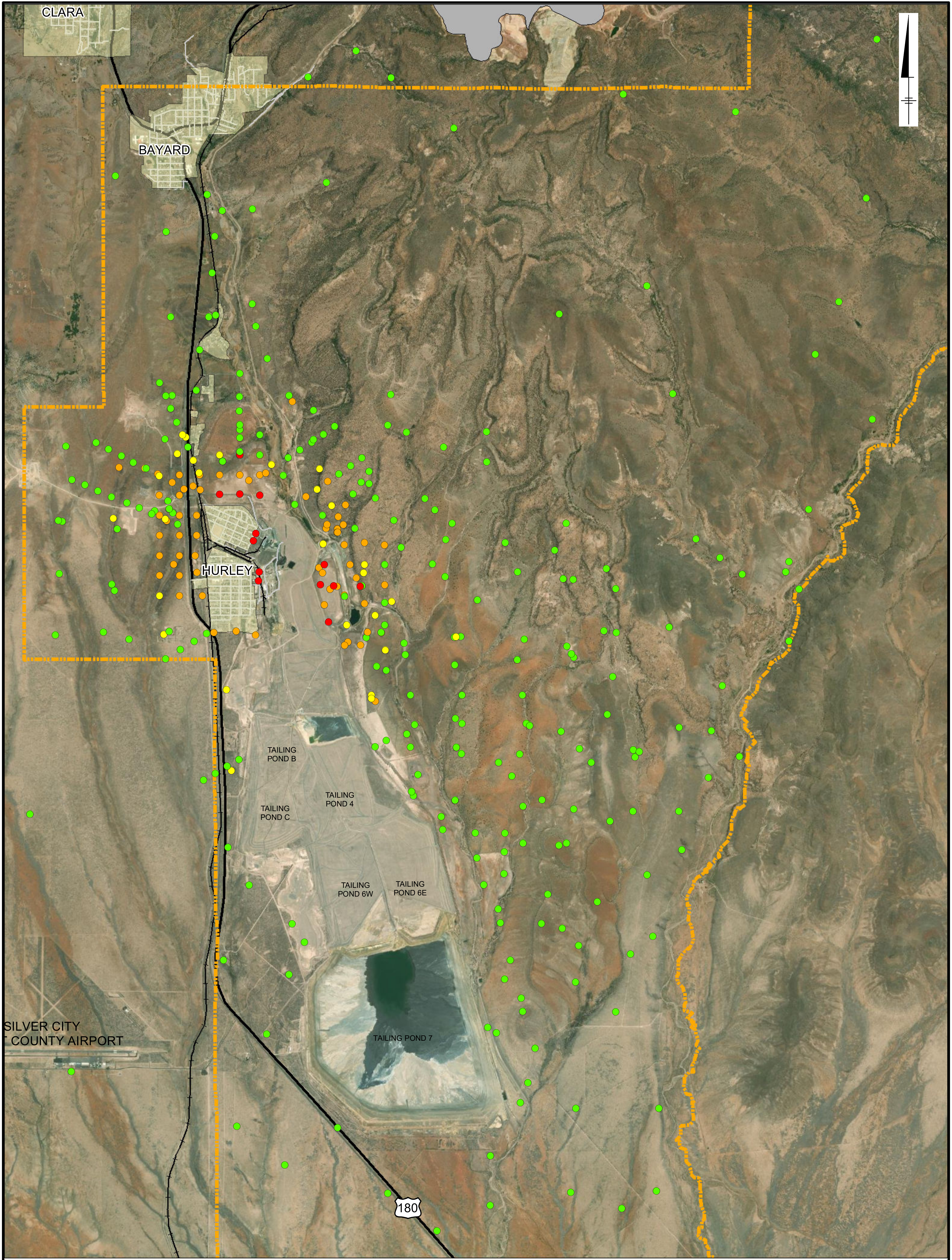
SMELTER/TAILINGS SOILS IU FS

CONCEPTUAL SITE MODEL

ARCADIS

FIGURE
3-1

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-02_Cu_SampleLocations.mxd



LEGEND:

Copper Concentration (mg/kg)

- 🟢 <1,100
- 🟡 1,100 - 1,600
- 🟠 1,600 - 5,000
- 🔴 >5,000

- ▭ STSIU Boundary
- ▭ Local City
- ▨ Stockpiles

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 5,400 10,800 Feet
GRAPHIC SCALE

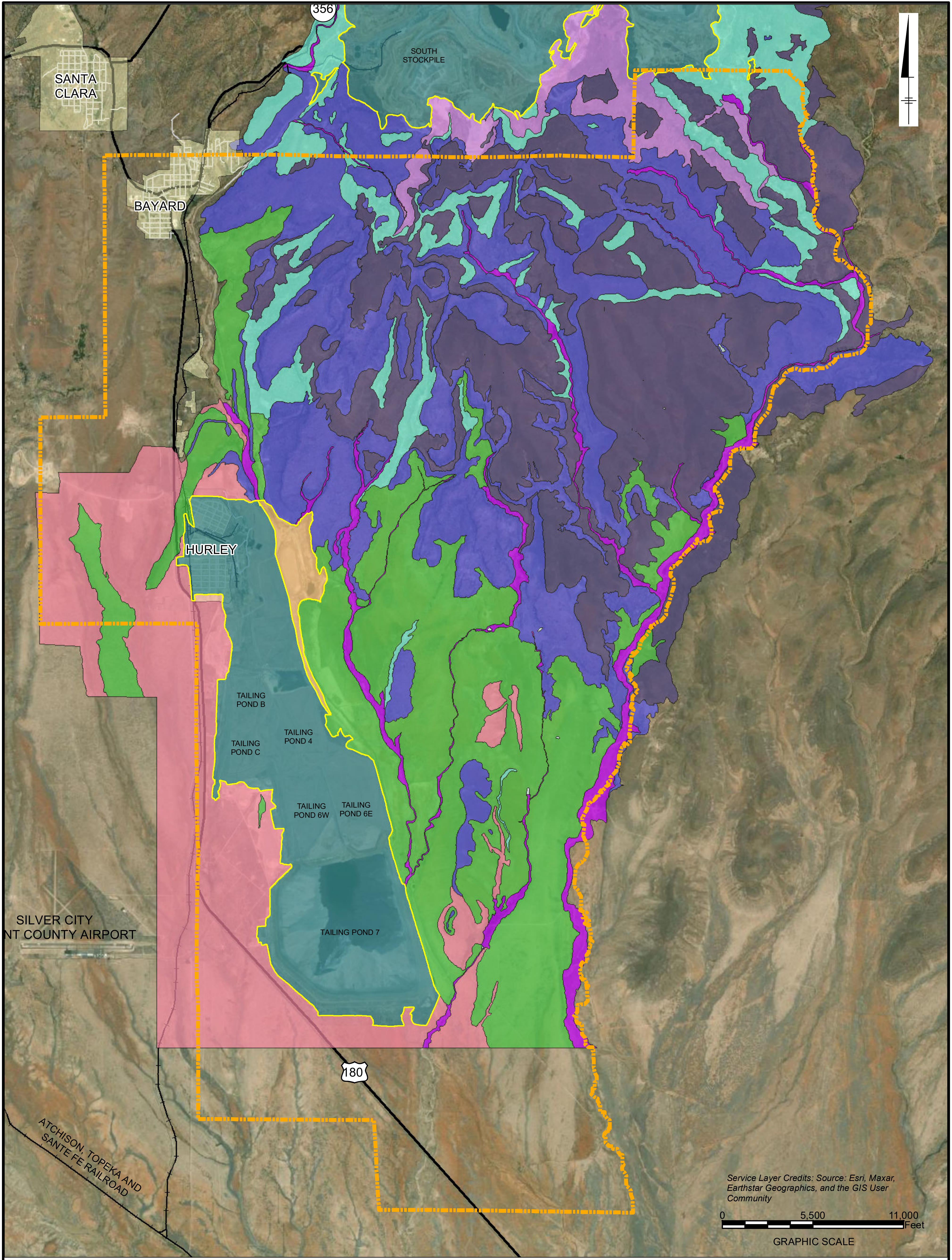
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

COPPER SAMPLE LOCATIONS

ARCADIS

FIGURE
3-2

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-03_VegetationAlliances.mxd



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND:

- 🟧 STSIU Boundary

Mine Facilities Alliances

- 🟫 Mine Facilities/Other
- 🟦 Mine Facilities/Urban

Vegetation Alliances

- 🟦 Alligator Juniper-Oak Woodland Alliance
- 🟪 Alligator Juniper-Oak/Grama Woodland Alliance
- 🟪 Fluvial Forest and Shrubland Alliance
- 🟩 Mesquite/Mixed Grama Shrubland Alliance
- 🟥 Mixed-Grama Herbacious Alliance
- 🟦 Mountain Mahogany Shrubland Alliance
- ⬜ Not Classified
- 🟪 Pondrosa Pine-Oak Forest Alliance

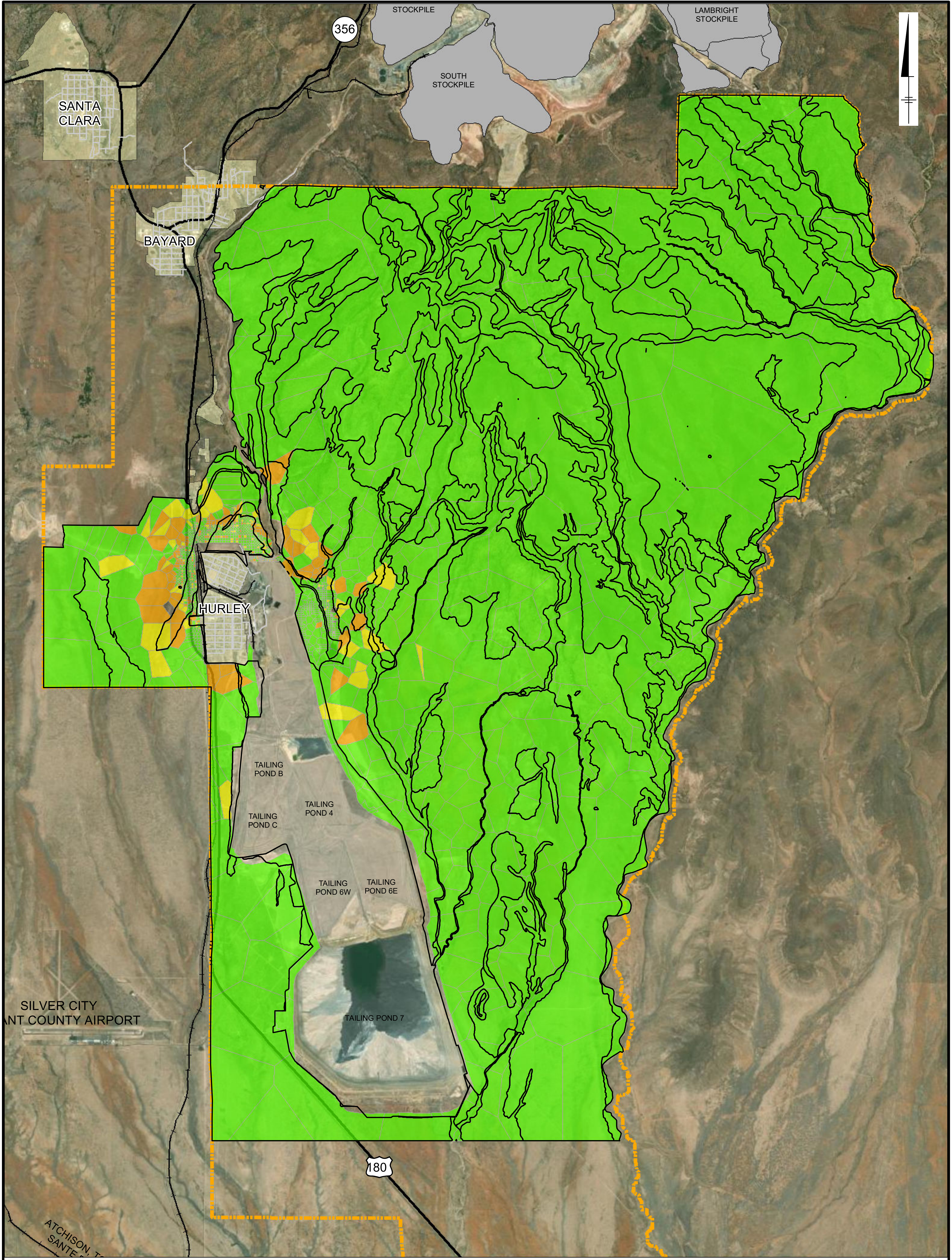
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

VEGETATION ALLIANCES

ARCADIS

FIGURE
3-3

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-04_Cu_Thiessens_VegIntersect.mxd



LEGEND:

Copper Concentration (mg/kg)

🟩 <1,100
🟨 1,100 - 1,600
🟧 1,600 - 5,000
🟥 >5,000

Vegetation Boundaries
STSIU Boundary
Local City

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 5,500 11,000 Feet
GRAPHIC SCALE

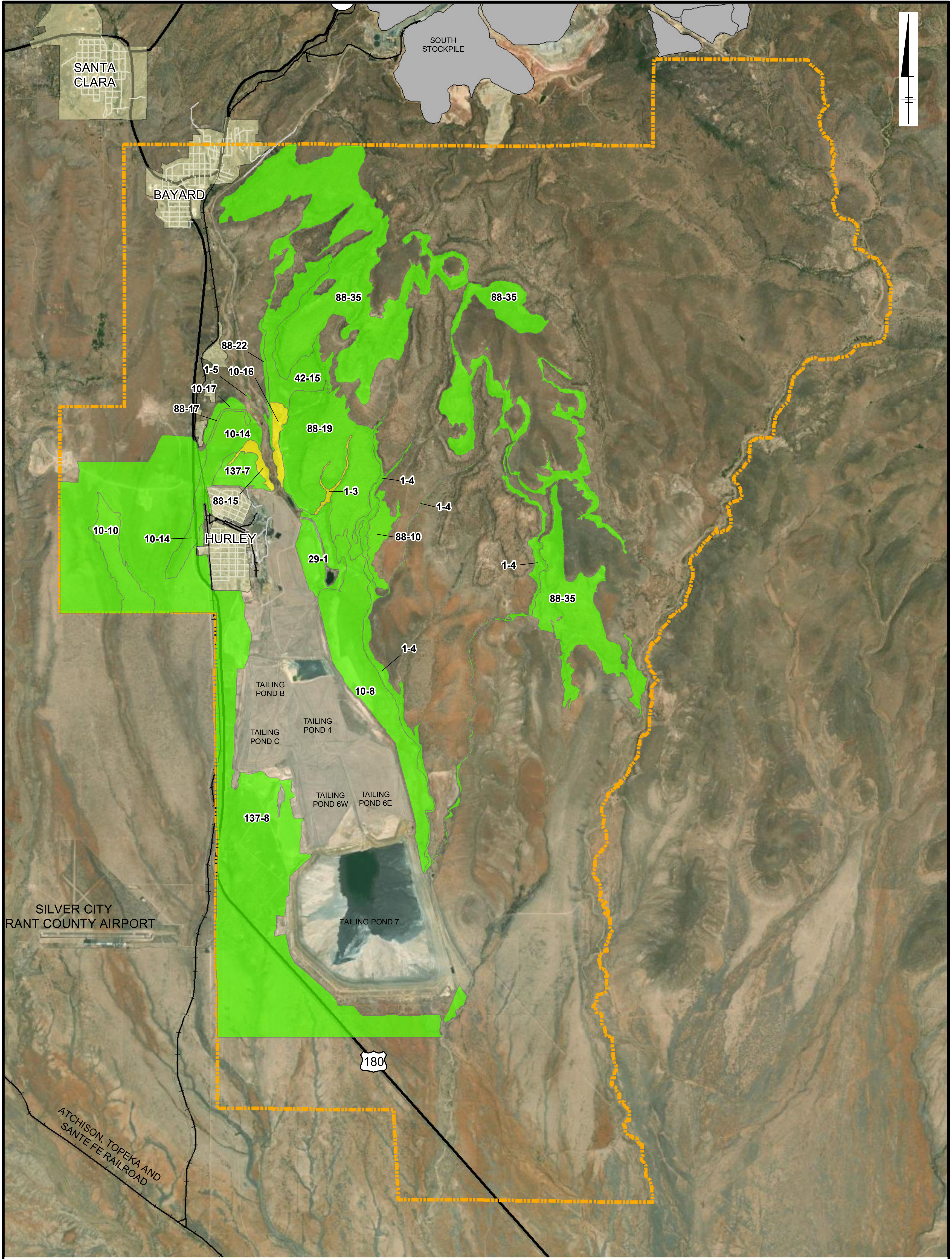
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

COPPER THIESSENS WITH VEGETATION BOUNDARIES

ARCADIS

FIGURE
3-4

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-05_Cu_Thiessens95UCL.mxd



LEGEND:

95 UCL Copper Concentration (mg/kg)

🟩 <1,100

🟨 1,100 - 1,600

▭ STSIU Boundary

⬜ Local City

⬛ Stockpiles

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 5,500 11,000 Feet

GRAPHIC SCALE

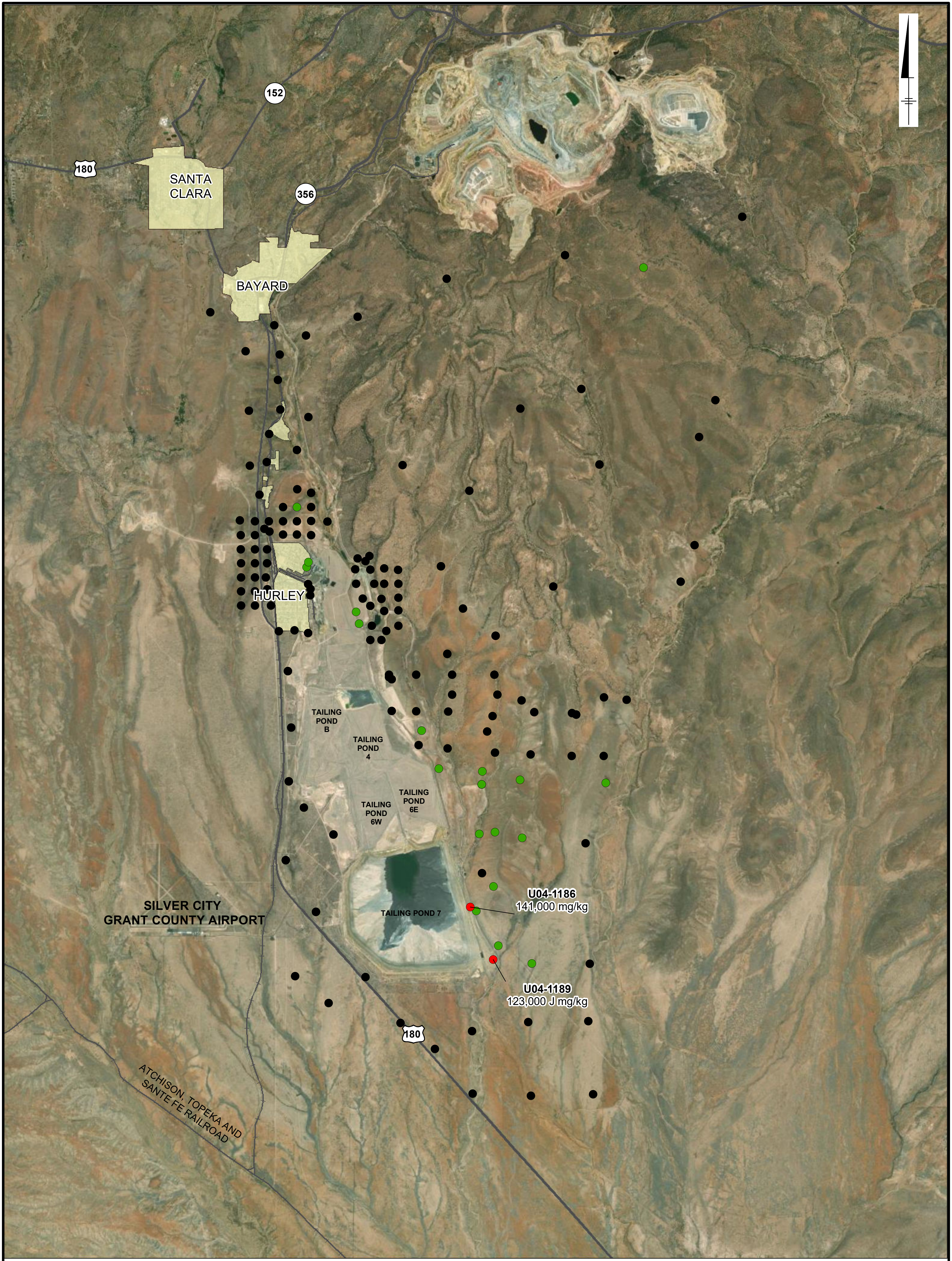
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

95 UCL AREA-WEIGHTED AVERAGE COPPER CONCENTRATIONS ACROSS VEGETATION ALLIANCES

ARCADIS

FIGURE
3-5

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-06_Iron_Concentrations.mxd



LEGEND:

Iron Concentration (mg/kg)

- ⚫ <40,000
- 🟢 40,000 - 70,000
- 🟡 70,000 - 100,000
- 🔴 >100,000

- 🟨 Local Cities
- ┼ Railroad
- — Major Roads

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 1 2 Miles
GRAPHIC SCALE

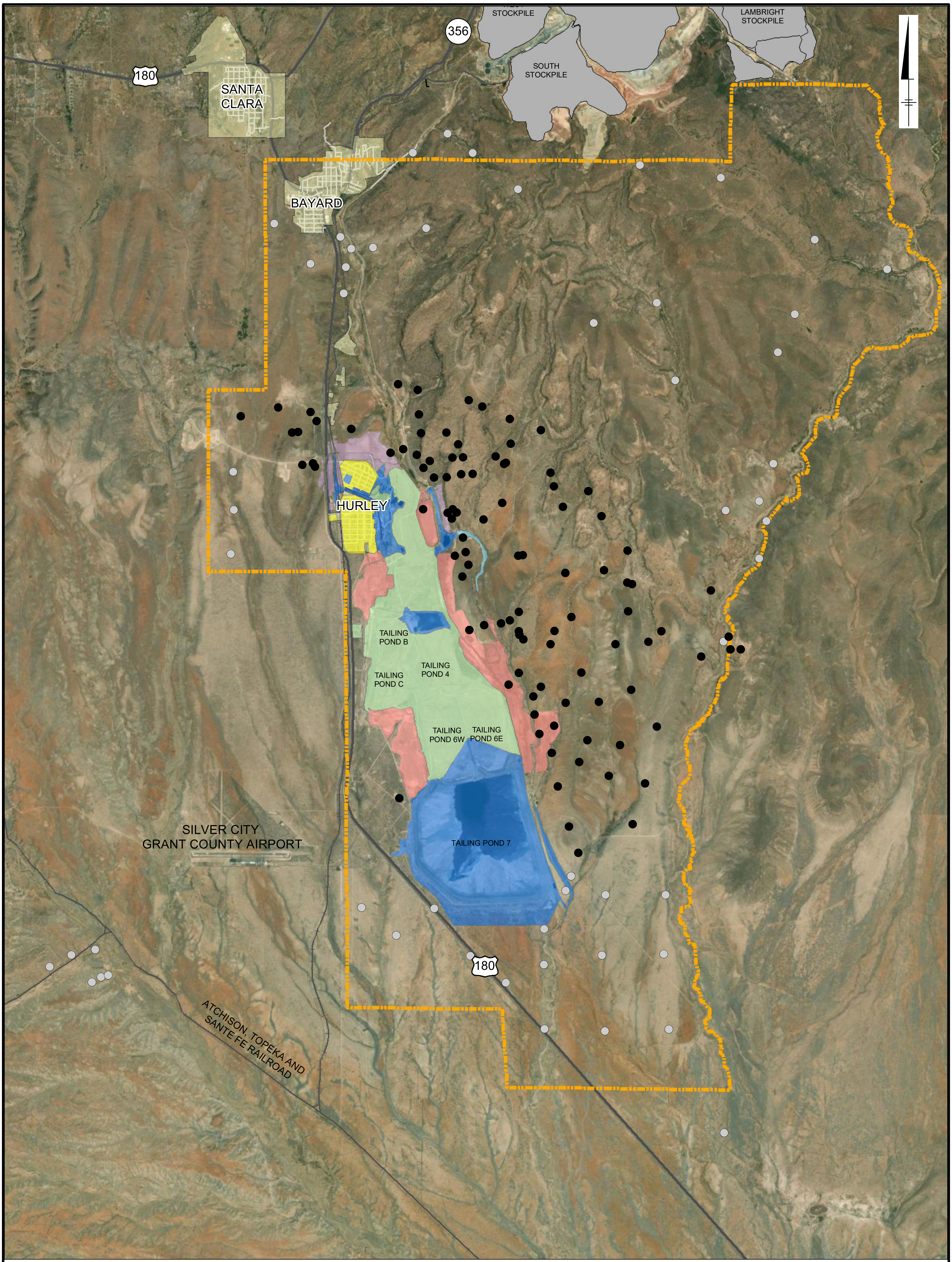
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

STSIU SAMPLE LOCATIONS AND IRON CONCENTRATIONS IN SOILS

ARCADIS

FIGURE
3-6

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-07_pCu_SampleLocations.mxd



LEGEND:

- ● Pre-White Rain Sample Location
- ● Post-White Rain Sample Location
- ▭ STSIU Boundary
- 🟥 Borrow Pit
- 🟩 CCP
- 🟦 Diversion Project
- 🟨 Hurley Soils IU
- 🟪 IRAs
- 🟦 Ops Reclamation
- ⬛ Stockpiles
- ⬜ Local City

Note:
1. Rangeland condition was determined using the observed apparent trend (OAT).

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 6,000 12,000
Feet
GRAPHIC SCALE

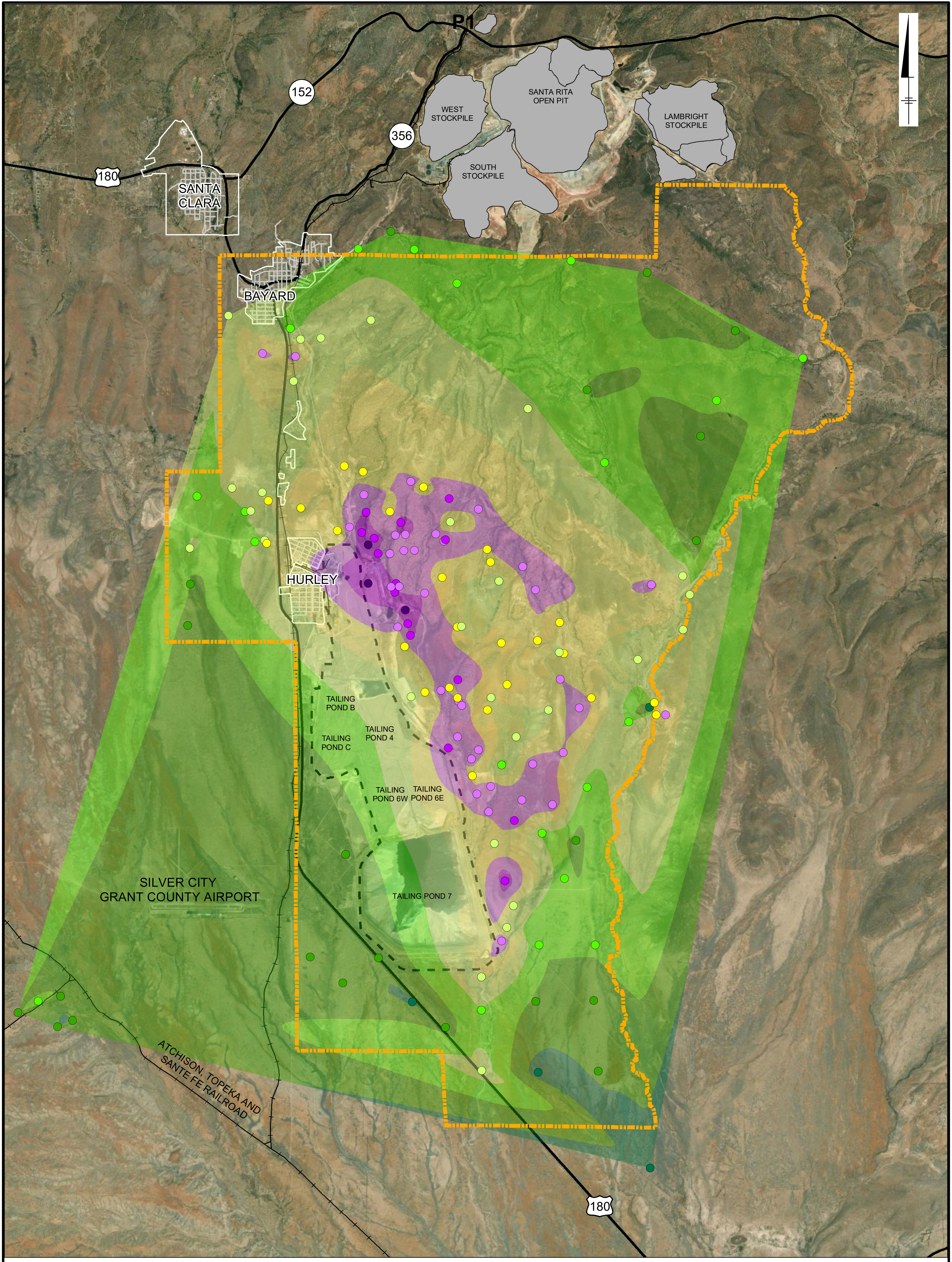
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

PRE- AND POST-WHITE RAIN pCu SAMPLE LOCATIONS

ARCADIS

FIGURE
3-7

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-08_pCu_Contours_NN.mxd



LEGEND:

pCu
- ● <3
- ● 3 - 4
- ● 4 - 5
- ● 5 -6
- ● 6 - 7
- ● 7 - 8
- ● 8 - 9
- ● 9 - 10
- ● >10

▭ STSIU Boundary

pCu Range
- ▨ <3
- ▨ 3 - 4
- ▨ 4 - 5
- ▨ 5 - 6
- ▨ 6 - 7
- ▨ 7 - 8
- ▨ 8 - 9
- ▨ 9 - 10
- ▨ >10

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 5,000 10,000 Feet

GRAPHIC SCALE

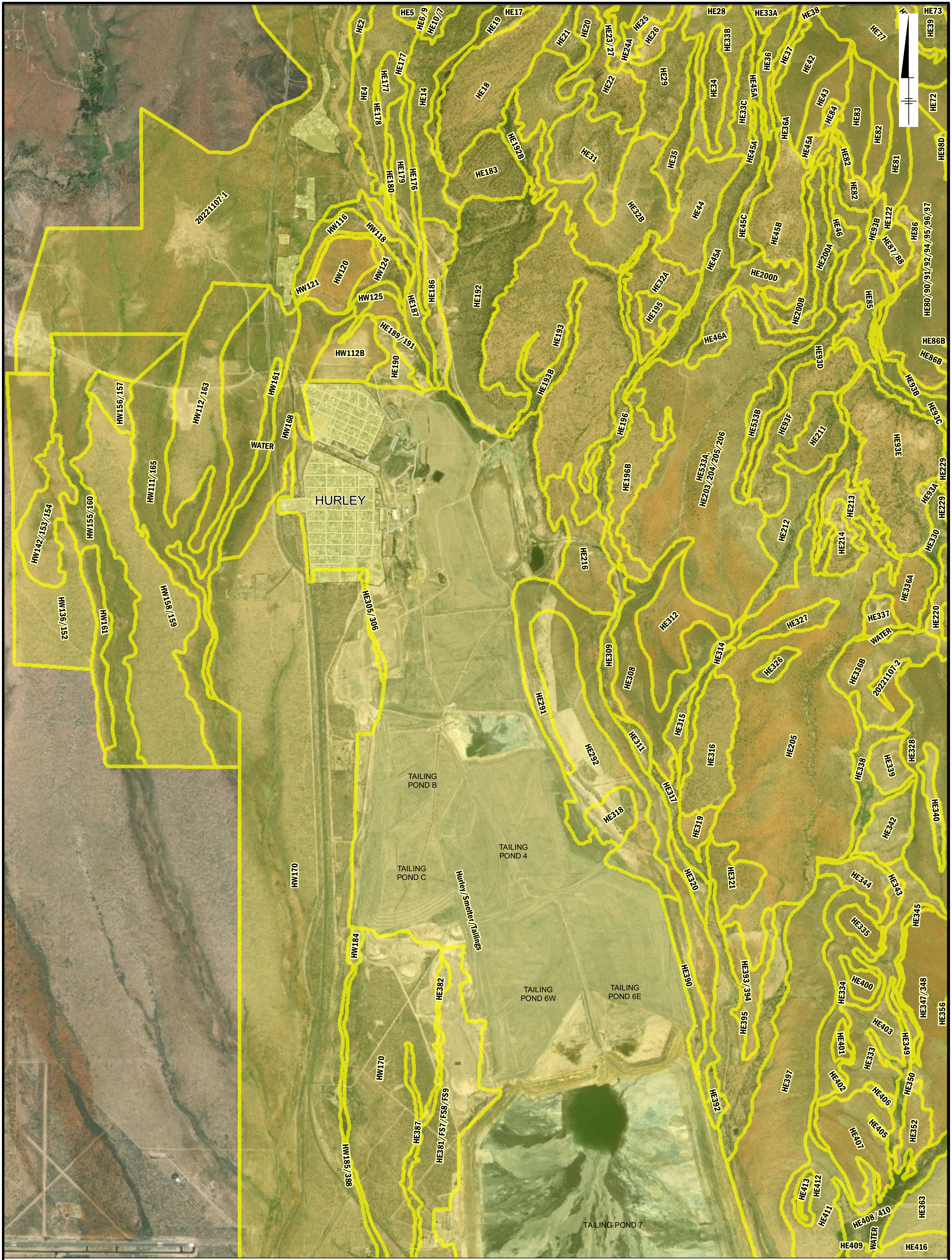
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

pCu SAMPLE RESULTS AND NATURAL NEIGHBOR INTERPOLATION

ARCADIS

FIGURE
3-8

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-09_Rangeland.mxd



LEGEND:

🟨	Rangeland Polygons (Exposure Unit for pCu)
▭	Local City

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 3,000 6,000 Feet

GRAPHIC SCALE

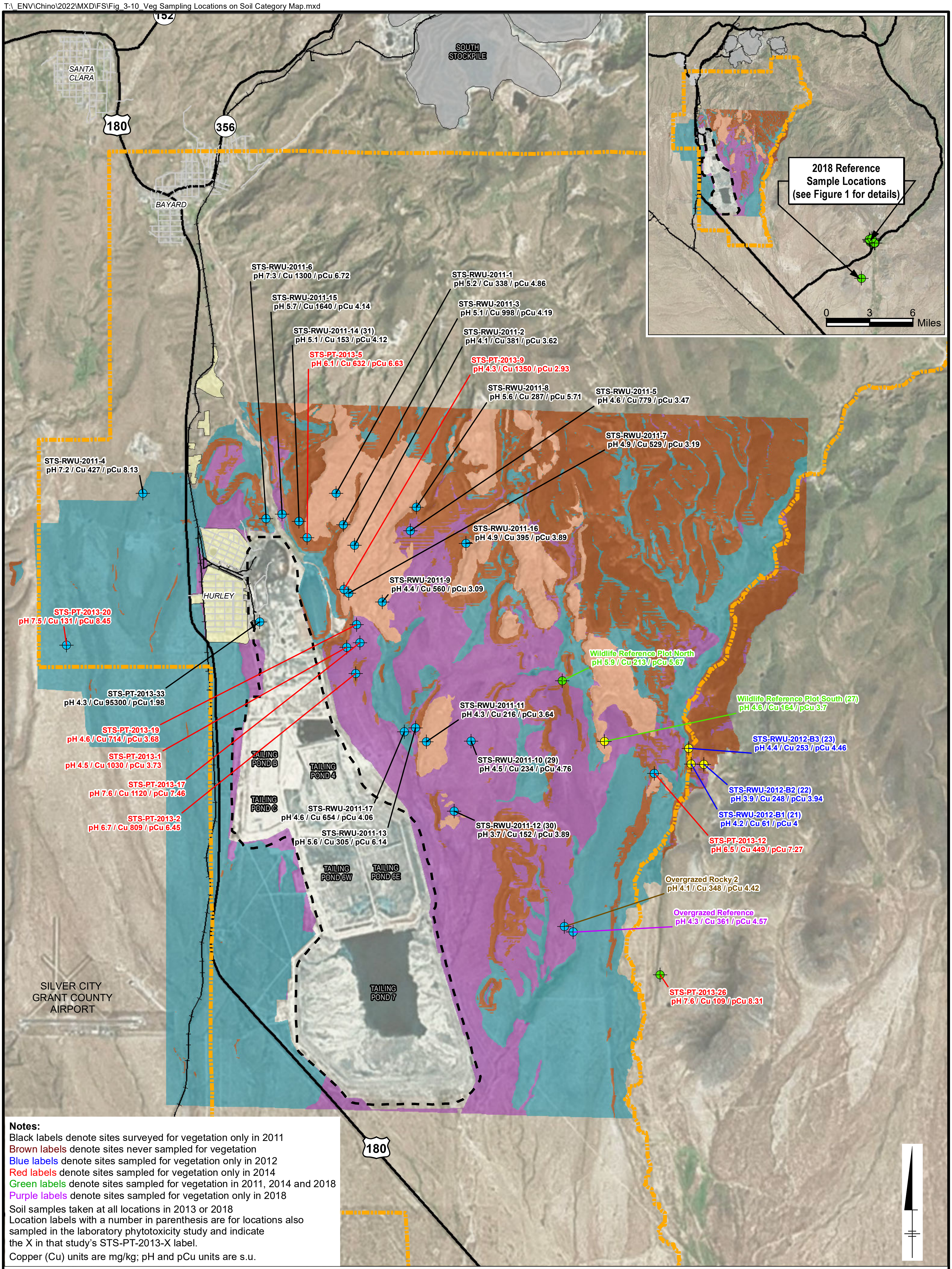
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

RANGELAND POLYGONS

ARCADIS

FIGURE
3-9

OFFICE: LAKEWOOD DB:MEB TM: MB PM: AT
PROJECT# B0063543.0000 11/10/2022 11:47:09 PM
T:_ENV\Chino\2022\MXD\FS\Fig_3-10_Veg Sampling Locations on Soil Category Map.mxd



Notes:

Black labels denote sites surveyed for vegetation only in 2011
Brown labels denote sites never sampled for vegetation
Blue labels denote sites sampled for vegetation only in 2012
Red labels denote sites sampled for vegetation only in 2014
Green labels denote sites sampled for vegetation in 2011, 2014 and 2018
Purple labels denote sites sampled for vegetation only in 2018
Soil samples taken at all locations in 2013 or 2018
Location labels with a number in parenthesis are for locations also sampled in the laboratory phytotoxicity study and indicate the X in that study's STS-PT-2013-X label.
Copper (Cu) units are mg/kg; pH and pCu units are s.u.

LEGEND:

- ⊕ Site vegetation survey and soil sampling location
- ⊕ De minimus vegetation survey and soil sampling location
- ⊕ Reference vegetation survey and soil sampling location
- ▭ STSIU Boundary
- ▭ Smelter Tailings Boundary

Soil Category

- 🟦 Flat Granular Soil
- 🟪 Flat Rocky Soil
- 🟫 Slope > 13%
- 🟧 Bedrock

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 5,000 10,000
Feet
GRAPHIC SCALE

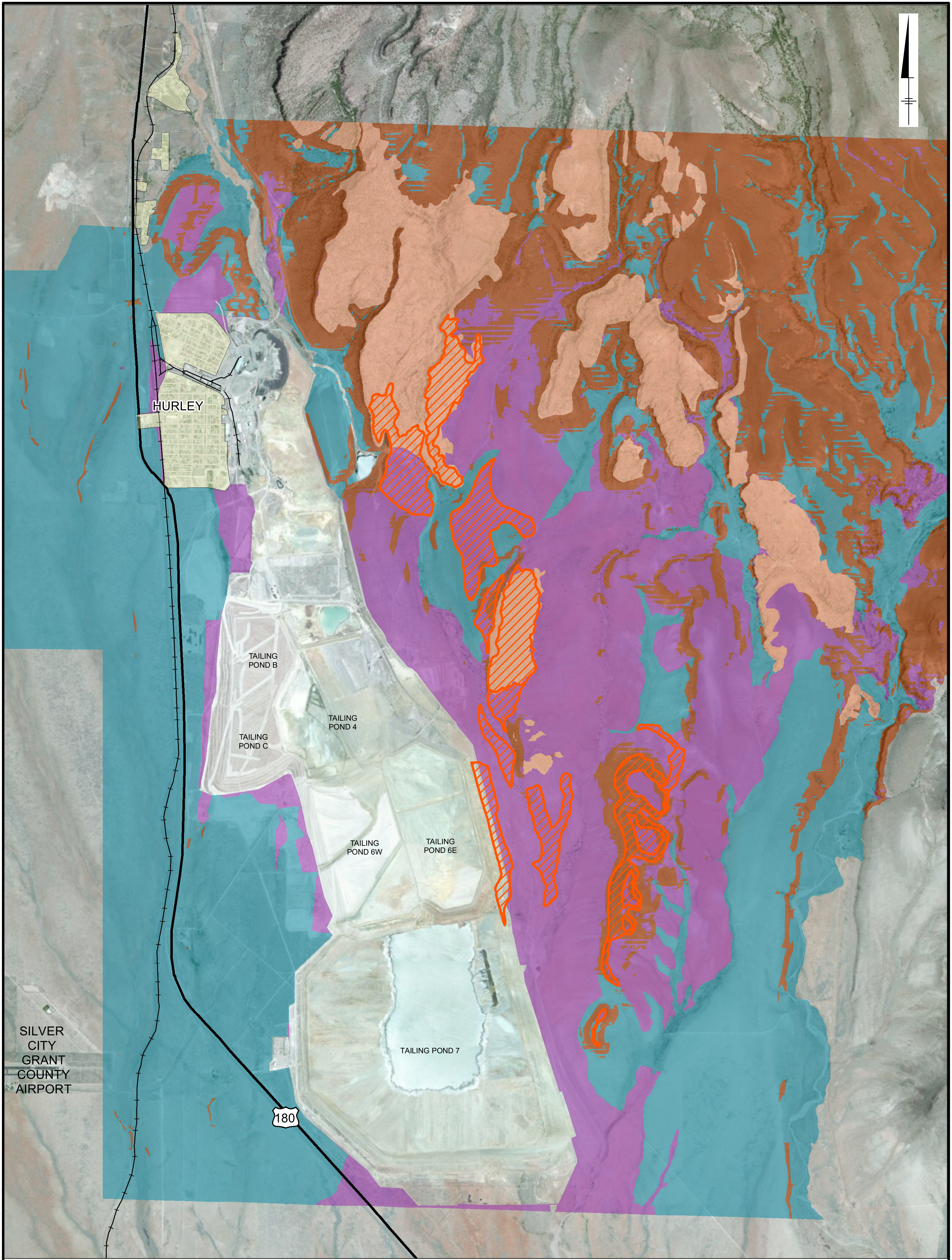
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

VEGETATION SAMPLING LOCATIONS ON SOIL CATEGORY MAP

ARCADIS

FIGURE
3-10

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-11_Unacceptable Rangeland and Wildlife Habitat with pCuLT5 and copperLT327.mxd



LEGEND:

▨ Unacceptable for Rangeland and Wildlife with pCu<5

🟨 Local City

Soil Category

🟦 Flat Granular Soil

🟪 Flat Rocky Soil

🟫 Slope > 13%

🟧 Bedrock

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 3,000 6,000 Feet

GRAPHIC SCALE

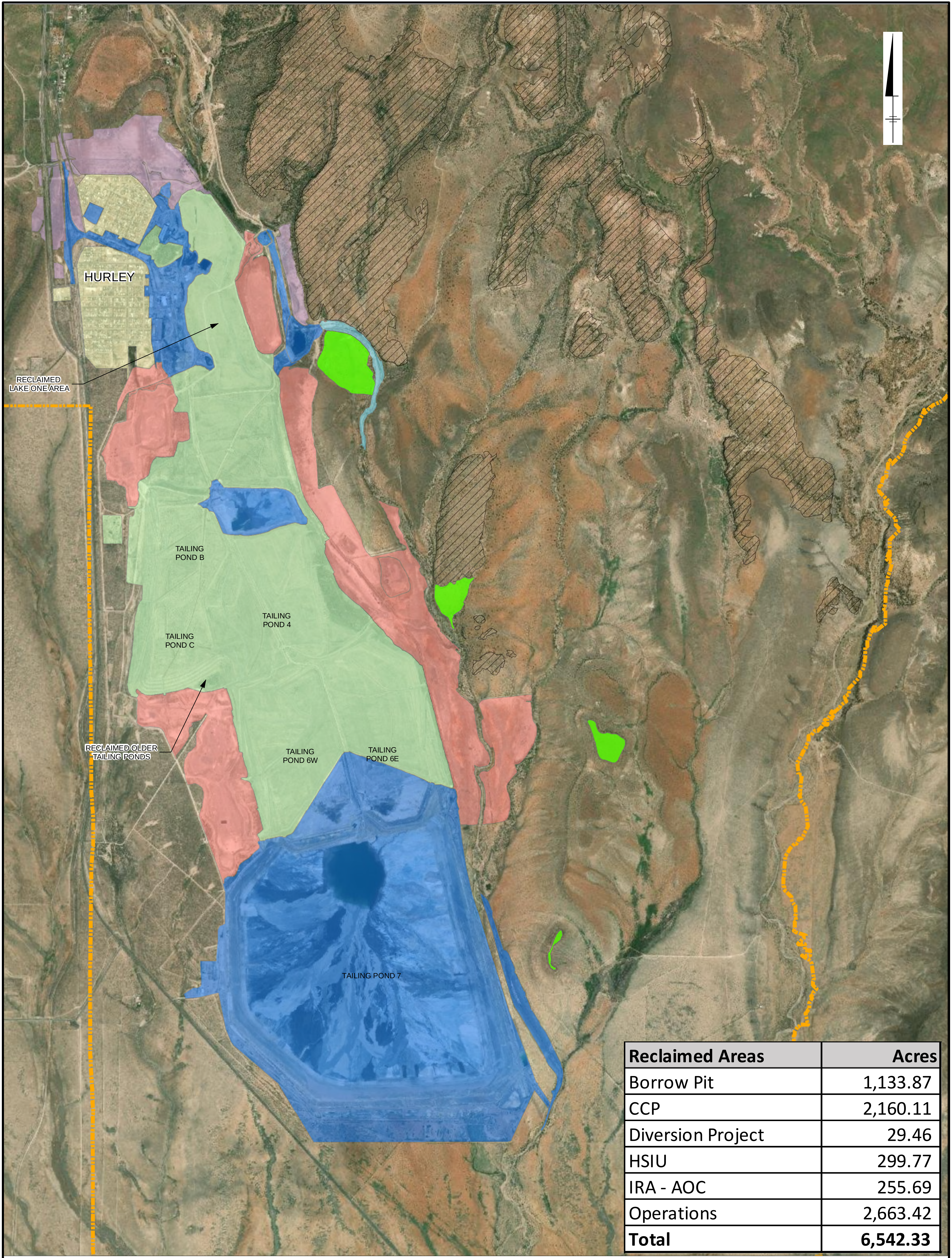
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

UNACCEPTABLE RANGELAND AND WILDLIFE HABITAT WITH pCu<5

ARCADIS

FIGURE
3-11

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-12_RockyFlat_Hybrid with pCu no more than 4.6_10pt7.mxd



Reclaimed Areas	Acres
Borrow Pit	1,133.87
CCP	2,160.11
Diversion Project	29.46
HSIU	299.77
IRA - AOC	255.69
Operations	2,663.42
Total	**6,542.33**

LEGEND:

🟥	Borrow Pit
🟩	CCP
🟦	Diversion Project
🟨	Hurley Soils IU
🟪	IRAs
🟦	Operations
▨	Bedrock Extents
🟩	pCu ≤ 4.6 in Flat Rocky Areas
🟧	STSIU Boundary

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 3,000 6,000 Feet

GRAPHIC SCALE

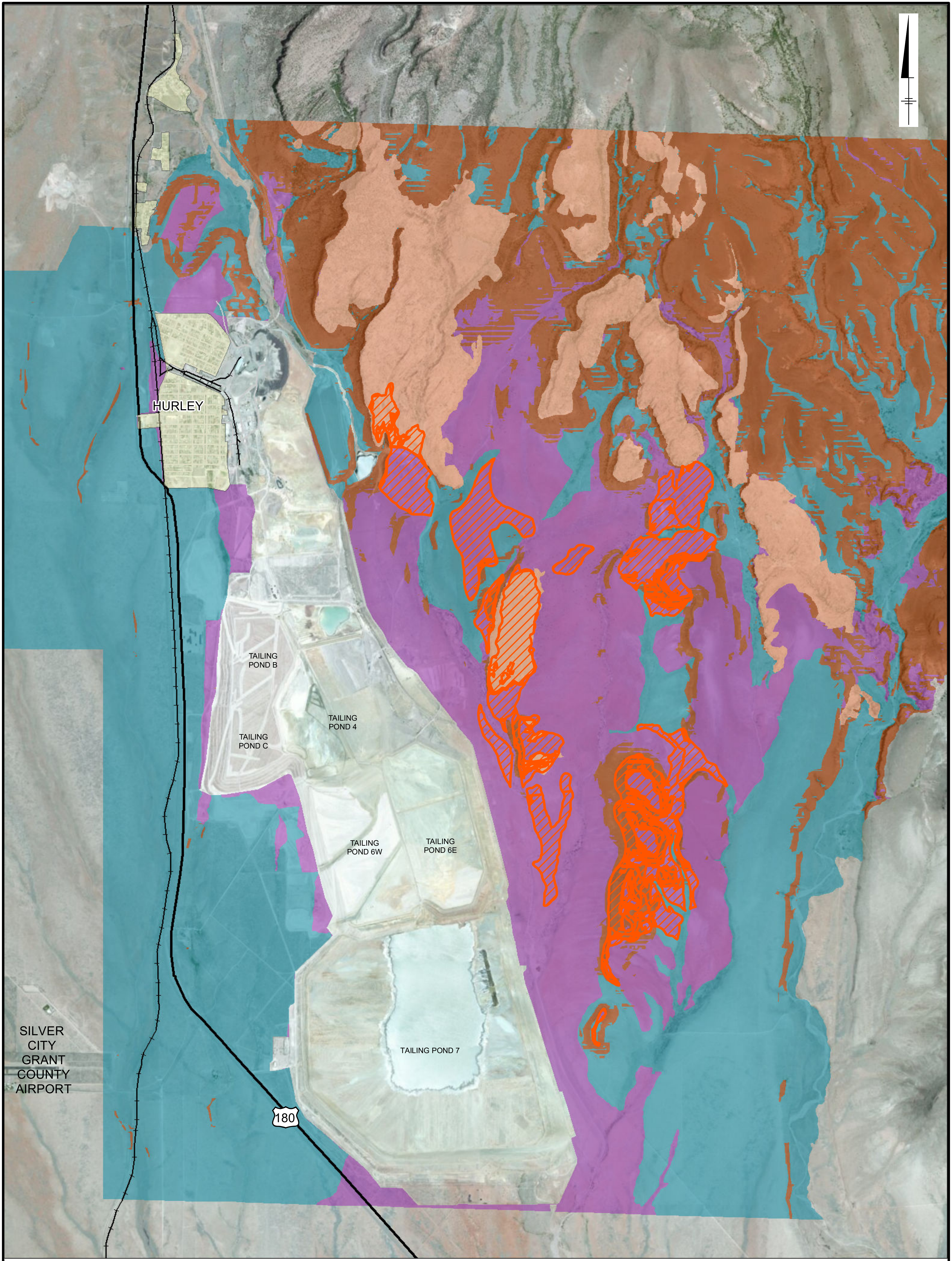
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

RANGELAND UNITS WITH MEAN pCu ≤ 4.6 ROCKY FLAT SOIL AREAS

ARCADIS

FIGURE
3-12

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_3-13_Unacceptable Rangeland and Wildlife.mxd



LEGEND:

▨ Unacceptable for Rangeland and Wildlife with pCu <5 where copper is > 327 mg/kg

🟨 Local City

Soil Category

🟦 Flat Granular Soil

🟪 Flat Rocky Soil

🟫 Slope > 13%

🟧 Bedrock

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

0 3,000 6,000 Feet

GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

SOIL/SLOPE CATEGORY MAP WITH AREAS UNACCEPTABLE FOR RANGELAND AND WILDLIFE AND pCu<5

ARCADIS

FIGURE
3-13

AUTHOR: MB
PROJECT# B0063543.0000
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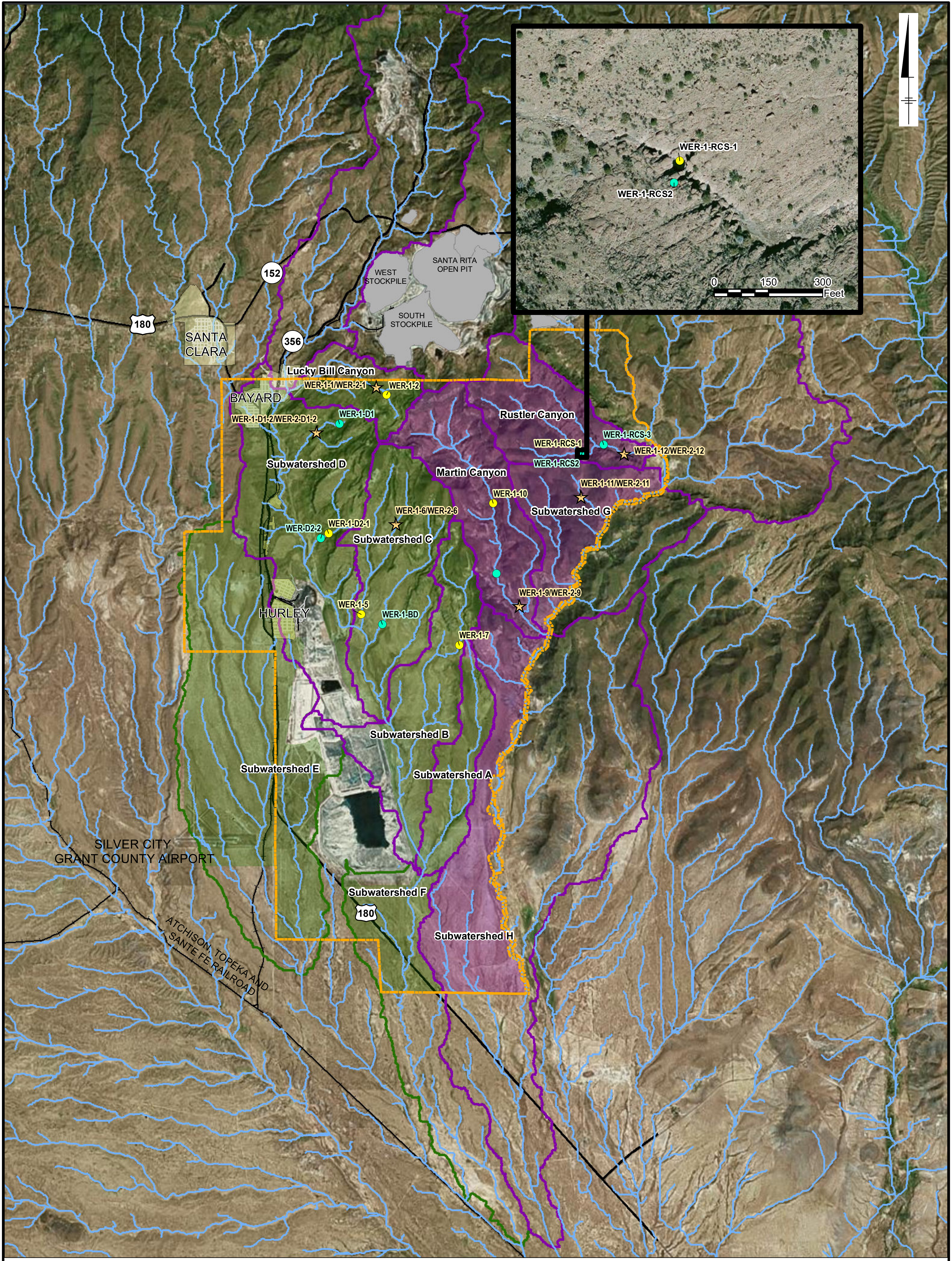

LEGEND:

- ● Analytical Sample Only
- ● Tox and Analytical Sample
- ☆ Tox and Analytical Sample (Sampled Twice)
- ☐ Lampbright Subwatershed Boundaries
- 🟪 Lampbright Subwatersheds within AOC
- ☐ Hanover-Whitewater Subwatershed Boundaries
- 🟩 Hanover-Whitwater Subwatersheds within AOC
- ⬜ Stockpiles
- ☐ STSIU Study Boundary
- ☐ Local City
- — Highway
- +—+ Railroad
- — Town Roads
- — Drainages

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 1.5 3
Miles
GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

WER SAMPLE LOCATIONS

ARCADIS

FIGURE
4-1

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
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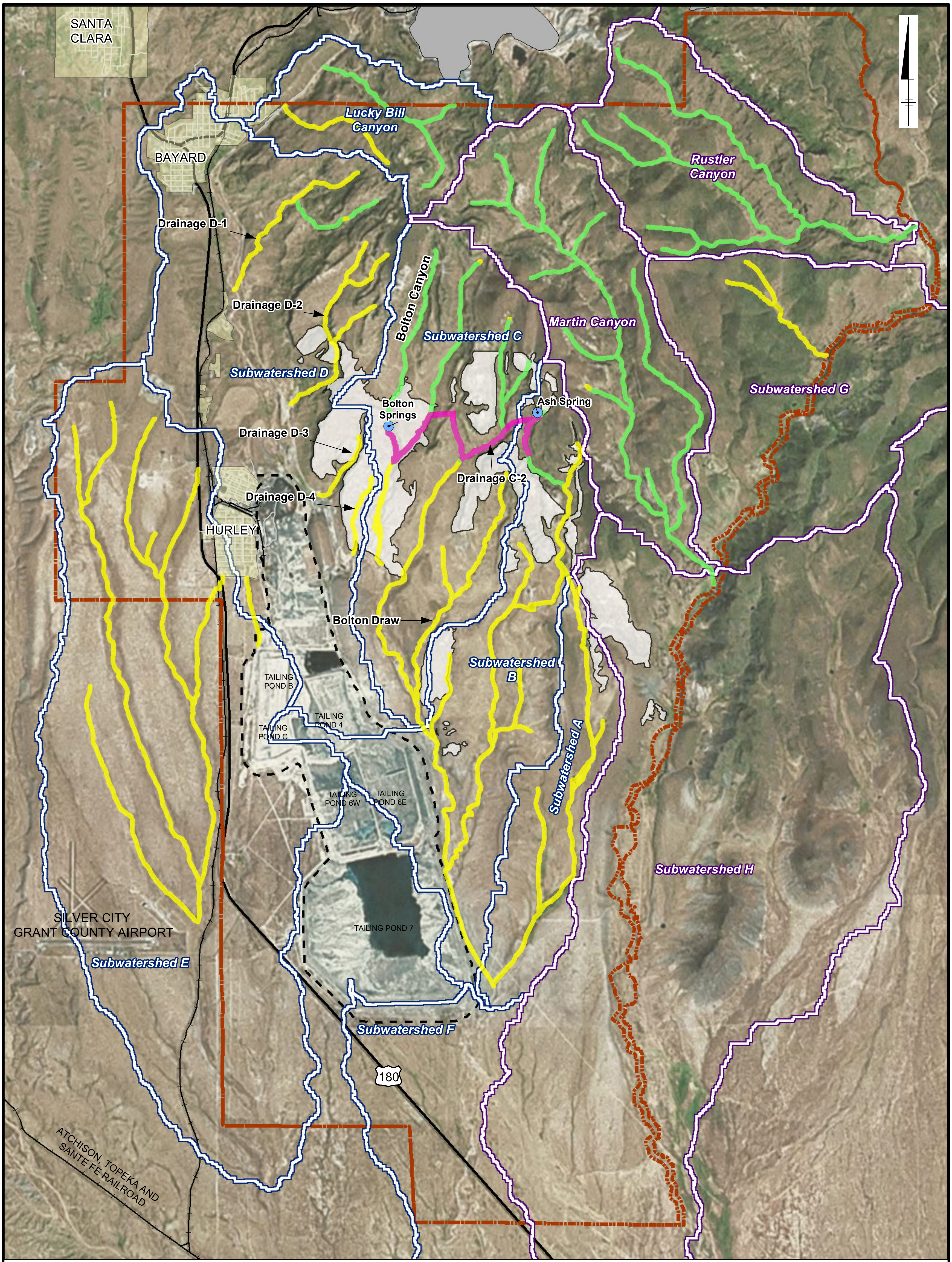


LEGEND:

- ▭ Lampbright Subwatershed Boundaries
- ▭ Hanover-Whitewater Subwatershed Boundaries
- ▭ STSIU Boundary
- ▭ Bedrock Extents
- ● Springs
- ━ USFWS Critical Habitat Transect
- ━ Ephemeral Stream
- ━ Non-Ephemeral Stream
- ┅ Smelter Tailings Boundary
- ▭ Local City
- ▭ Stockpiles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 5,000 10,000
Feet
GRAPHIC SCALE

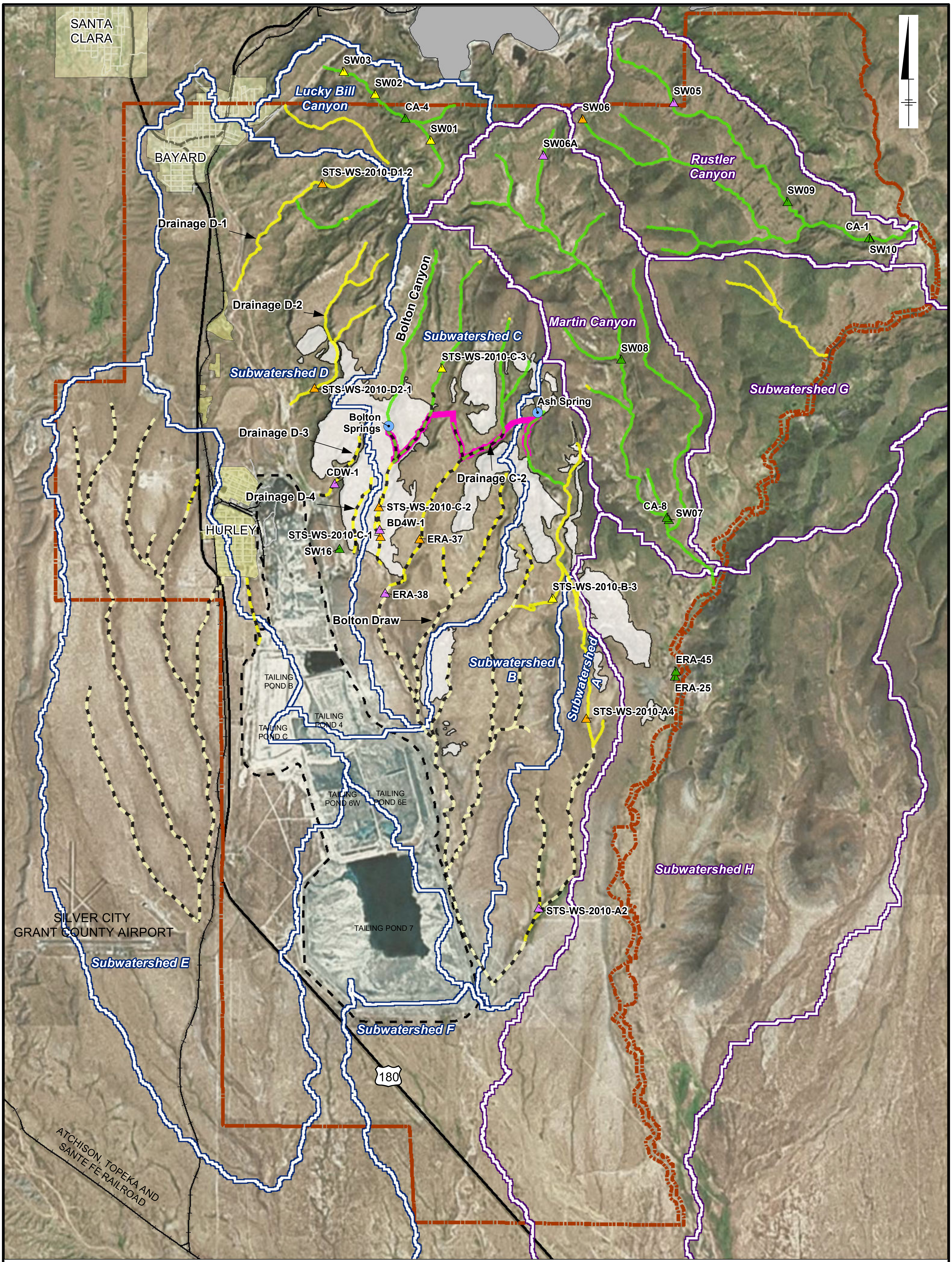
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

HYDROLOGIC CLASSIFICATIONS OF STSIU DRAINAGES

ARCADIS

FIGURE
4-2

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_4-03_Cu_SurfaceWater.mxd



LEGEND:

● Springs

▬ USFWS Critical Habitat Transect

▭ Lampbright Subwatershed Boundaries

▭ Hanover-Whitewater Subwatershed Boundaries

▭ STSIU Boundary

▭ Bedrock Extents

▭ Local City

Stream Type/Condition

Non-Ephemeral/Confident No Concerns

Non-Ephemeral/Potential Active Remediation or Monitored Natural Attenuation

Ephemeral/Confident No Concerns Based on Proposed WER Model

Ephemeral/Potential Active Remediation or Monitored Natural Attenuation

Ephemeral/Limited Potential for Pools

Hardness-Adjusted Cu HQ Values

▲ <1

▲ 1 - 3

▲ 3 - 7

▲ >7

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 5,000 10,000 Feet
GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

NATURE AND EXTENT OF COPPER CONTAMINATION TO SURFACE WATER DRAINAGES

ARCADIS

FIGURE
4-3

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
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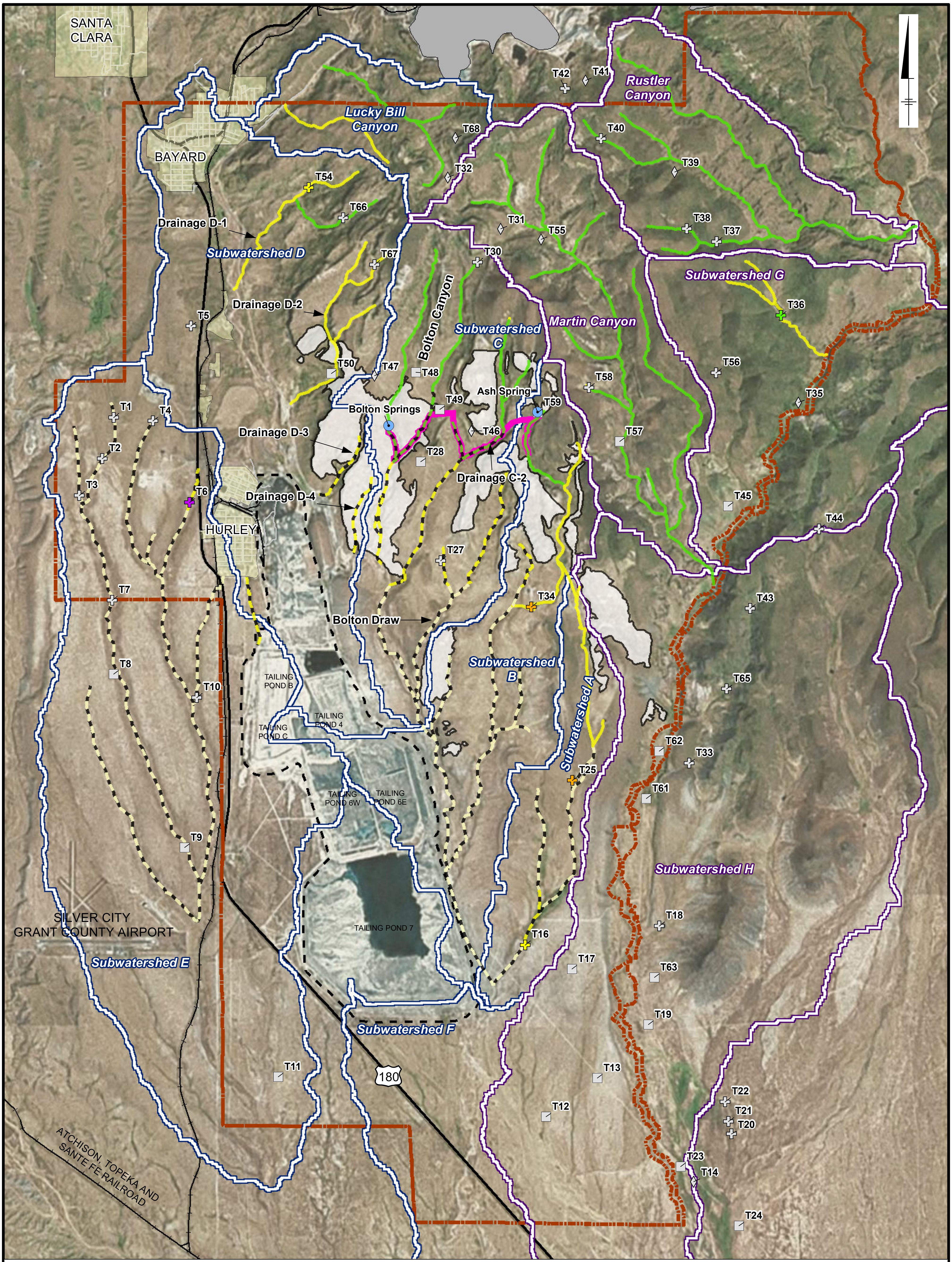


LEGEND:

● Springs

USFWS Critical Habitat Transect

STSIU Boundary

Bedrock Extents

Lampbright Subwatershed Boundaries

Hanover-Whitewater Subwatershed Boundaries

Stream Type/Condition

Non-Ephemeral/Confident No Concerns

Non-Ephemeral/Potential Active Remediation or Monitored Natural Attenuation

Ephemeral/Confident No Concerns Based on Proposed WER Model

Ephemeral/Potential Active Remediation or Monitored Natural Attenuation

Ephemeral/Limited Potential for Pools

✚ Earthen Impoundments in the Drainage

◇ Earthen Impoundments Outside the Drainage

▢ Concrete or Steel Tank

HQ Value

▢	No Data
🟩	<1
🟨	1 - 3
🟧	3 - 7
🟪	>7

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 5,000 10,000 Feet

GRAPHIC SCALE

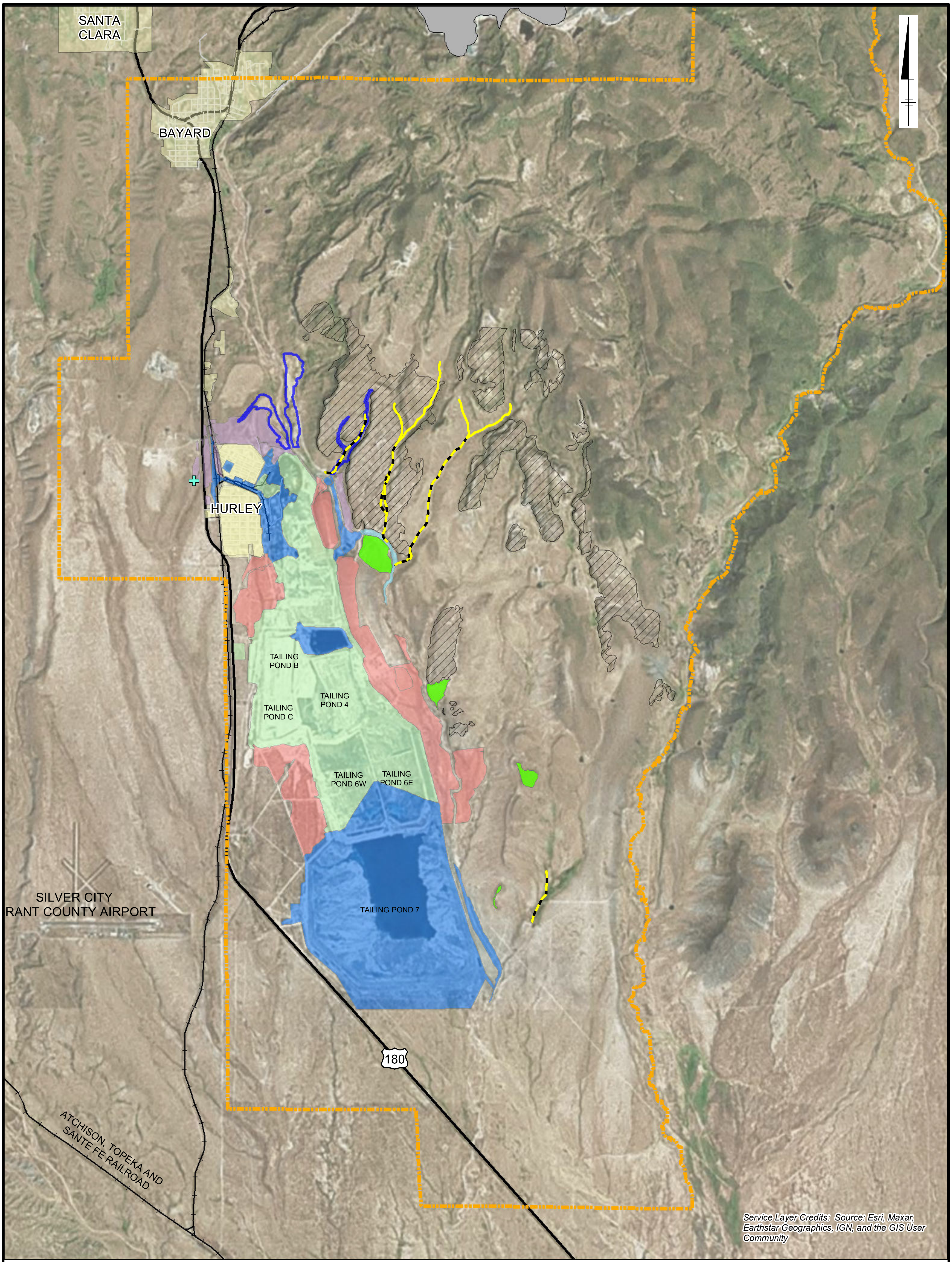
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

STSIU STOCK TANK LOCATIONS

ARCADIS

FIGURE
4-4

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
T:_ENV\Chino\2022\MXD\FS\Fig_6-01_Cu_pCu_Hydrology.mxd



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

LEGEND:

- ✚ Stock Tank Proposed for Monitoring

Stream Type/Condition

- — Non-Ephemeral/Proposed for Monitoring
- - - Ephemeral/Proposed for Monitoring
- 🟩 pCu-driven Action
- ☐ Avian Monitoring Boundary
- ☐ STSIU Boundary
- 🟥 Borrow Pit
- 🟩 CCP
- 🟦 Diversion Project
- 🟨 Hurley Soils IU
- 🟪 IRAs
- 🟦 Operations
- ▨ Bedrock Extents
- 🟨 Local City
- ⬛ Stockpiles

0 4,000 8,000 Feet
GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO
SMELTER/TAILINGS SOILS IU FS

AREAS IDENTIFIED FOR REMEDY OR MONITORING

ARCADIS

FIGURE
6-1

Appendix A

Year 5 Monitoring Report for Smelter/Tailing Soils Investigation Unit Amendment Study Plots

FREEPORT-MCMORAN

Freeport-McMoRan Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Sherry Burt-Kested
Manager, Environmental Services
Telephone: 575-912-5927
e-mail: sburtkest@fmi.com

December 5, 2017

Certified Mail #70171000000085316184
Return Receipt Requested

Mr. Bruce Yurdin, Director
New Mexico Environment Department
Water Protection Division
P.O. Box 5469
Santa Fe, New Mexico 87502

Dear Mr. Yurdin:

Re: Amendment Study Plots Year 5 Monitoring Report for the Smelter Tailing Soils Investigative Unit – Chino AOC

Freeport-McMoRan Chino Mines Company (Chino) submits under separate cover the *Year 5 Monitoring Report for Smelter Tailing Soils Investigative Unit (STSIU) Amendment Study Plots*, under the Chino Administrative Order on Consent (AOC). The report provides the data collected for the fifth and last year of monitoring as well as the evaluation of all five years of the data collected for the study. The report was submitted today to Mr. David Mercer.

Please contact Ms. Alicia Voss at (602) 366-8049 with any questions or comments concerning this report.

Sincerely,

Brian D. McGill

for Sherry Burt-Kested
Manager, Environmental Services

SBK:pp
20171205-001

xc: David Mercer, NMED
Joseph Fox, NMED
Petra Sanchez, US EPA
Alicia Voss, FCX

Imagine the result

Freeport-McMoRan Chino Mines Company

Year 5 Monitoring Report for Smelter/Tailing Soils Investigation Unit Amendment Study Plots

Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

November 2017

ARCADIS

Year 5 Monitoring Report for Smelter/Tailing Soils Investigation Unit Amendment Study Plots

Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Prepared for:
Freeport-McMoRan Chino Mines Company

Prepared by:
Arcadis
1687 Cole Blvd.
Suite 200
Lakewood
Colorado 80401
Tel 303.231.9115
Fax 303.231.9571

Our Ref.:
B0063543.0009

Date:
November 2017

Tables

Figures

Appendices

Acronyms and Abbreviations

ABA	acid-base accounting
AGP	acid generating potential
ANOVA	analysis of variance
ANP	acid neutralization potential
AOC	Administrative Order on Consent
BACI	Before-After-Control-Impact
bgs	below ground surface
BMP	best management practice
C:N	carbon:nitrogen ratio
CCA	Canonical Correspondence Analysis
CCP	Closure/Closeout Plan
CES	Cooperative Extension Service
Cu-ISB	Cu_{2+} Ion-Selective Electrode
EPA	United States Environmental Protective Agency
ERA	Ecological Risk Assessment
GPS	global positioning system
IA	Investigation Area
ICP-AES	inductively coupled plasma-atomic mass spectroscopy
µm	microns
mg/kg	milligrams per kilogram
MMD	New Mexico Mining and Minerals Division
mV	millivolts
NMED	New Mexico Environment Department
NMSU	New Mexico State University
NNP	net neutralization potential
NPR	neutralization potential ratio

OAT	observed apparent trend
PAG	potentially acid generating
PCQ	point-centered quarter
pCu	cupric ion activity
pre-FS RAC	pre-Feasability Study Remedial Action Criteria
QAP	Quality Assurance Project Plan
RI	Remedial Investigation
SOP	standard operating procedure
SPLP	synthetic precipitation leaching procedure
STSIU	Smelter and Tailing Soil Investigation Unit
t/ac	tons per acre
TKN	total Kjeldahl nitrogen
TOC	total organic carbon
USDA	United States Department of Agriculture

Executive Summary

The soil in some areas of the Smelter and Tailing Soil Investigation Unit (STSIU) at the Chino Mine in New Mexico is characterized by depressed pH and elevated copper concentrations. Freeport-McMoRan Chino Mines Company (Chino) submitted an Amendment Study Work Plan for the STSIU (Work Plan) to the New Mexico Environment Department (NMED) in 2006, finalized in 2008 (Arcadis 2008), and approved by NMED in 2008 (NMED 2008). The approved Work Plan summarizes the study design for the evaluation of three remedial technologies (application of lime, organic matter, and tilling to the soil) and their potential application to the STSIU. The evaluation is a pilot-level effort that includes qualitative and quantitative analyses to provide a preliminary recommendation of the usefulness of each of these technologies for remediating the soil.

When this study was originally proposed and defined, the goal was to test the remedial technologies for effectiveness and permanence of the remediation to: (1) reduce risk of copper exposure to small, ground-feeding birds, and (2) improve habitat and rangeland for wildlife and livestock. After the Work Plan was formally approved and implemented, NMED issued revised pre-feasibility study remedial action criteria (pre-FS RAC) for the STSIU in March 2011, which, along with other factors,[1] changed the study. The copper pre-FS RAC is the threshold for total soil copper concentration that may be hazardous to small ground-feeding birds (1,600 milligrams per kilogram [mg/kg]), and the pCu pre-FS RAC is a threshold for a soil-based metric called cupric ion activity[2] for the

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[1] The study objectives, specifics of the remedial techniques, monitoring approach, and methods described in the approved Work Plan were modified due to: (1) field constraints, (2) establishment of the pre-FS RAC for plants, (3) a white rain event that altered the soil chemistry, (4) observed greater soil variability on study plots than expected, and (5) comments from NMED. These modifications, implemented over the course of the pilot study, are described in each annual Amendment Study report or in this report (Arcadis 2010b, 2011b, 2012, 2013; in particular, see Appendix A of the Year 2 Amendment Monitoring Report, ARCADIS 2011b). Amendments and/or tilling were applied to three test plots on June 17 and 18, 2008 and conditions monitored semi-annually until October 2013. **Table 1** outlines changes that occurred in the study design and monitoring over time.

[2] Cupric ion activity is referred to as pCu, where pCu = $-\log\{Cu^{2+}\}$, and meets criteria requirements when pCu is greater than or equal to 5 in areas where the total copper

protection of wildlife habitat and rangeland for livestock. Through reclamation borrow activities and interim remedial actions in the STSIU, currently Chino believes that there is little to no area remaining with impacts above the pre-FS RAC copper concentration for birds. Soil in large areas has been removed and re-seeded to meet the reclamation need for borrow areas to cover tailings. The pending STSIU Feasibility Study (FS) will delineate reclaimed areas and evaluate and define additional small areas if concentrations are still present that exceed pre-FS RAC. The three technologies evaluated in this report, therefore, will potentially be used to improve wildlife habitat and livestock rangeland areas and secondarily to reduce risk to birds via a reduction in plant uptake of copper and the subsequent reduction of copper exposure to birds.

The primary objectives of this study were to test the effectiveness of lime, organic matter, and/or tilling in: (1) increasing and then stabilizing pH and pCu, (2) reducing copper uptake into plants, and (3) improving the vegetative community structure and composition for wildlife and livestock. Results of this study will be used to determine if amending copper-impacted soils using lime and/or organic matter, with or without tilling, should be advanced to full-scale implementation via the STSIU FS. The primary metrics used to assess the effectiveness of the remedial technologies in this pilot study are pCu, plant uptake of copper, plant species richness, percent vegetative cover, and plant species composition.

The pilot study was performed on four square 0.25-acre plots. In June 2008, two plots were amended with lime (1.3 tons/acre [t/ac]) and organic matter (as manure) and subsequently tilled (East and North amendment plots), one plot was amended with lime (1.3 t/ac) and organic matter without tilling (Northeast amendment plot), and one was a control plot without amendments or tilling (West control plot). Three levels of organic matter were tested for performance, with the highest application rate (72 t/ac) on the Northeast plot, a mid-level rate (47 t/ac) on the East plot, and lowest rate (24 t/ac) on the North plot (see **Table 1: Study Design Revised in March 2008**). No treatments were performed without organic matter additions. The plots were located on different qualities of rangeland (poor on East plot and fair or good to fair on the

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concentration is greater than 327 mg/kg (<327 mg/kg is soil background concentration, and pCu criteria is not needed for such low copper areas). Note: an increase in pCu is a reduction in cupric ion activity and potential phytotoxicity. Though pCu was measured using selective electrode potential for a subset of the data, the analyses in this report were based on pCu estimated from predictive regressions ($r^2 = 0.97$) of total copper and pH.

others) and slope conditions (steep [≥13%] slope on Northeast, relatively level slopes on others) to evaluate the appropriateness of the technologies across a broad spectrum of upland environments. Each study plot represented a different combination of the three technologies and environmental conditions (i.e., each is a single replicate of treatment combinations) but was paired with a nearby untreated reference plot for comparison. Treated plots were not seeded.

Success of the remedial technologies was gauged using the primary metrics. Success is defined as an increase in soil pCu, decrease in copper concentration in plant tissue, an increase in plant species richness and cover, an increase in rangeland grass cover, and a reduction in undesirable plant species (toxic, non-native). Additionally, re-establishment of the vegetation community after tilling or disturbance from placing amendments on plots was evaluated using the mine’s reclamation success criteria (Daniel B. Stephens & Associates, Inc. 1999 and Chino 2007). Of these, the vegetation community parameters’ response to the chemistry changes (not the soil chemistry) were the most important metrics for evaluating remediation success because the objective of the remediation is to improve wildlife habitat and rangeland for livestock.

A range of supporting (“secondary”) metrics was used to interpret the study findings. Secondary metrics were soil pH (higher pH reduces copper availability to plants), total soil copper, and acid generation potential of soil. Total organic carbon (TOC), carbon to nitrogen ratio (C:N), and supplemental nutrient data (e.g., nitrogen species) were secondary metrics that affect cover and richness. Water-soluble copper concentration determined by synthetic precipitation leaching procedure (SPLP) was also used as a secondary metric to gauge amendment success by evaluating the potential mobility of copper from soils upon contact with natural precipitation. Vegetation re-establishment and other diversity measures (Shannon diversity and evenness) supplemented the primary vegetation metrics by informing decisions on whether the remedial technologies caused more harm than good to the vegetation community.

The pilot study was designed to determine the most effective combination of the three treatments (lime, tilling, organic matter) tested, with the intent to further investigate which individual treatments were most effective once the best combination is identified. To evaluate each treatment’s effectiveness separately, evidence from two other events was gathered: (1) a “white” rain event in January 2008 and (2) a haul road ripping event in 2003. For the first, an alkaline “white” rain fell on the amendment plots before treatment in January 2008, altering soil chemistry (higher pH). This unanticipated event confounded interpretation of the pilot study results because it effectively limed the site and elevated soil pH right before treatment with lime was planned in May 2008.

However, the event provided an opportunity to evaluate the effect of lime additions without vegetation community disturbance, tilling, or organic amendments. The haul road reclamation in 2003 provided information on the effect of tilling without amendments. Haul roads traversing poor rangeland areas were ripped to a depth of 12 to 18 inches with no amendments or seeding applied (similar to tilling of the North plot and ripping of the East plot; for the purposes of this report, ripping is hereafter included as part of the definition of "tilling"[3]). Photographs and observations of the results of haul road ripping were reviewed. Changes in the amendment plots that differed from changes seen with the white rain liming and haul road reclamation were evaluated as to whether they could be ascribed to organic matter additions on the amendment plots.

For the pilot study, the conclusions on the effectiveness of the tested remedial technologies in improving pCu and plant community parameters when applied individually or in combination are based on comparing responses of treated plots and adjacent reference plots, as well as interpreting the results of the ancillary white rain and haul road ripping events.

The results of these comparisons and additional events will help inform decisions on the individual remedies and combination of remedies that might be best for the STSIU. The main conclusions drawn from the Amendment Study and recommendations on when and where to use each remedial technology are summarized in the following subsections.

Lime

The 2008 white rain event was effective at: (1) increasing pCu, (2) decreasing plant uptake of copper, and (3) improving plant community richness. The white rain was particularly effective on the level plots that were not located on steep slopes, whether in poor or fair rangeland. The pH monitoring program (Arcadis 2017a) evaluated the persistence of the improvement in pH and pCu from the white rain, and demonstrated that the improvement has been sustained after 5 years, consistent with the results of this study. Low pCu plots in the relatively level areas improved to pCu above 5 or near 5. In areas exhibiting continual improvement in pCu, monitoring natural attenuation is recommended as the best remedial technique.

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[3] Whether tilled or ripped depended on rockiness of soil, where the rockier site was ripped.

More time may be needed to statistically demonstrate if pCu is increasing in some areas. While the white rain event did not result in the establishment of plant species that are potentially toxic or of low value to wildlife or livestock, vegetation cover was not increased enough to show benefit to wildlife habitat or improved rangeland quality. Overall, lime alone does not appear to change the community enough to enact the plant community changes desired.

Combined Technologies

While the white rain even was effective, the remedial technologies applied after the white rain were not as effective above and beyond the white rain effect. When all three technologies were combined (lime, organic matter, tilling) on the relatively level plots, pH was increased (with 90 percent confidence). However, the three technologies did not significantly improve soil pCu. Possibly the lack of significant change in pCu overall may have been due to high variability in pCu resulting from heterogeneity of the field soils, sampling error, analytical error, and using an equation to calculate pCu.

In parallel with the insignificant change in pCu, reduction in copper uptake into plants from the three technologies combined also was minimal, as the white rain was responsible for most of the reduction in the copper uptake. Tilled plots (to 8 inches deep) did not show improved pCu relative to untilled plots in the study. The effect of tilling deeper (to 12 to 18 inches) on the plant community was demonstrated by an example outside this specific study. A haul road traversing poor rangeland condition with no vegetation initially was tilled, and that action did result in high abundance of diverse grasses after 11 years. This example supports the concept that vegetation changes could be from decompacting the soil on the road.

The finding on amendment plots of no clear benefit from all three treatments (in increasing pCu and decreasing uptake of copper in plants after the white rain) suggests that chemical changes from mixing are not the driver of the large community changes, but rather that tilling physically decompacts soil, allowing plants to re-establish on poor rangeland. In contrast, the fair rangeland on relatively level ground undergoing the same treatments did not increase in cover or richness and reversed succession toward an earlier seral stage with loss of grasses. The fair rangeland plot on steeper ground also experienced a setback in succession to an earlier stage with a loss of desirable grasses. Unlike the poor rangeland plot, these areas already had a diverse plant community and rangeland grasses present, even before the white rain, despite a low pCu of approximately 2 to 3 at that time.

The benefit from decompacting soil by tilling is large and should be considered as a remedial technology after evaluating the appropriate depth in the FS. However, it is warranted only if erosion of surface soil resulting in a compacted or rocky surface was caused by a loss of the roots of a plant community impacted by pCu in the past, rather than from overgrazing. Lime does not need to be combined with tilling, unless it is required for effectiveness in very low pCu areas (< 2).

Amendment with Organic Matter

Organic matter, in combination with the other technologies, did not improve pCu or reduce copper uptake significantly. Organic matter may have exacerbated annual weed invasion and slowed recovery after the plots were disturbed from tilling or amendment application. Unlike the white rain effect alone, the disturbance from tilling combined with the effect of applying amendments in the form of lime and organic matter increased undesirable annual weeds substantially (e.g., golden crownbeard, carelessweed), some of which are potentially toxic to livestock.

At the end of 5 years, weeds increased less on the steep plot that was not tilled but also less on the haul road that was tilled (after 11 years), which suggests that factors other than tilling may have increased the invasion of undesirable weeds. However, organic matter may not be responsible because organic matter was applied at high amounts on the steeper plot with less weed invasion, and was not applied at all on the tilled haul road, which also experienced less weed invasion. The plot with less invasion was steep and subject to runoff of the organic matter, which may explain why it exhibited less invasion than the more level plots amended with organic matter. The weed invasion may be short term, as seen on the haul road that was tilled. However, after 8 years, the fair and poor rangeland plots on relatively level ground still support a fair number of potentially toxic annual weed species. Organic matter added to soils for reclamation rarely has been shown to be beneficial in arid or semi-arid areas (Paschke et al. 2005, Bay et al. 2010).Therefore, organic matter amendments are not recommended.

Steep Slopes

The three remedial technologies at the levels evaluated in this pilot study are not viable for increasing pCu in steeper areas ($\geq$ 13% slope). Tilling is not a feasible method for slopes too steep or too rough (high amount of boulders) for the equipment. It is also not feasible for areas with shallow or exposed bedrock. Liming and organic matter application were not effective at increasing pCu on steeper areas, which generally are in fair rangeland condition in the STSIU. Even the lime in the white rain had only a small effect on pCu on the steeper areas.

After disturbance from amendment application or tilling, the vegetation was successfully re-established with minimal erosion on all treated plots at the level expected for the 5-year successional stage.

Multiple Soil Categories

Guidelines for remediation of different soil categories on impacted areas of the STSIU from this assessment are as follows for the three following soil categories investigated in this report:

1. Poor rangeland with rocky soils in relatively level areas:
    - Tilling is recommended in depressed pCu areas pending further evaluation in the FS.
2. Fair to good quality rangeland with granular soils in relatively level areas:
    - Technologies evaluated in this study are not recommended.
3. Fair to good quality rangeland on steeper slopes ($\geq$ 13 percent):
    - Technologies evaluated in this study are not recommended.

Lime amendment is recommended only in poor rangeland areas with very low pH (< 2), if tilling is not found to be fully effective. These recommendations should provide the highest net environmental benefit.

The conclusions and recommendations documented in this pilot study will be considered in combination with findings from other relevant STSIU studies (Arcadis 2011a, 2017a, 2017b) to determine remedial actions that should be advanced to full-scale implementation via the FS.

1. Introduction

On December 23, 1994, Freeport-McMoRan Chino Mines Company (Chino) and New Mexico Environment Department (NMED) entered into an Administrative Order on Consent (AOC). The AOC addresses the possible environmental impacts within the defined Investigation Area (IA) at the Chino Mine in Vanadium, New Mexico (the Site) due to mining operations and historical releases. The AOC directs evaluation of remedial strategies if problems are identified. The upland Smelter and Tailing Soil Investigation Units (STSIUs) are two of the six investigation units within the IA (**Figure 1**). A draft Amendment Study Work Plan for the STSIU (Work Plan) was submitted to NMED in 2006, finalized in 2008 (Arcadis 2008), and approved by NMED in 2008 (NMED 2008). The approved Work Plan summarizes the study design for the evaluation of three remedial technologies (application of lime, organic matter, and tilling to the soil) and their potential application to STSIU.

The study objectives, specifics of the remedial techniques, monitoring approach, and methods described in the approved Work Plan were modified due to: (1) field constraints, (2) establishment of the pre-Feasibility Study Remedial Action Criteria (pre-FS RAC) for plants, (3) a white rain event that altered the soil chemistry at the Site, (4) observed higher soil variability on study plots than expected, and (5) comments from NMED. These modifications, implemented over the course of this exploratory pilot study, are described in each annual Amendment Study report or this report (Arcadis 2010b, 2011b, 2012, 2013; in particular, see Appendix A of the Year 2 Amendment Monitoring Report, ARCADIS 2011b). Four 0.25-acre amendment plots were established for the study with four adjacent 0.25-acre reference plots. Amendments (lime at the same application rate, organic matter at three application rates) and/or tilling were applied to three of the amendment plots on June 17 and 18, 2008 (the fourth plot was a control). Soil conditions were monitored semi-annually and vegetation periodically on all plots for 5 years per the Work Plan, with the final monitoring completed in October 2013. **Table 1** outlines the study, timing of sampling, and changes that occurred in the study design and monitoring over time, which are explained in more detail in Section 2.

When this study was originally proposed and defined, the goal was to test the remedial technologies for effectiveness and permanence to: (1) reduce risk to small, ground-feeding birds and (2) improve habitat and rangeland for wildlife and livestock. After the Work Plan was formally approved and implemented, NMED issued pre-FS RAC for the STSIU in September 2010. The pre-FS RAC included a 1,600 milligrams per kilogram (mg/kg) threshold for total soil copper concentrations that may be hazardous to small ground-feeding birds and a threshold for a soil-based metric called “cupric ion activity” (pCu; quantified as pCu = $-\log\{Cu^{2+}\}$ [4]) for protecting plants in wildlife habitat and livestock range. As the value of pCu decreases, cupric ion activity and potentially phytotoxicity increases. Due to reclamation borrow activities and interim remedial actions that have occurred to date in STSIU, Chino currently believes that there is little to no area remaining that is impacted above the pre-FS RAC copper concentration for birds. Soil in large areas has been removed and re-seeded to meet the reclamation need for borrow areas to cover tailings[5]. The pending STSIU FS will delineate reclaimed areas and evaluate and define additional small areas if concentrations still exceed pre-FS RAC. The technologies evaluated in this report, therefore, would likely be used primarily to improve wildlife habitat and livestock rangeland areas and secondarily to reduce risk to birds via a reduction in plant uptake of copper and the subsequent reduction of copper exposure to birds.

The primary metrics of concern to be improved with the remedial technologies evaluated in this pilot study are not only pCu, but also plant uptake of copper, plant species richness, plant cover, and plant community composition. The Site-Wide Ecological Risk Assessment (ERA) identified these vegetation parameters as potentially adversely affected by pCu (Newfields 2005). A further description of the STSIU and environmental conditions within the STSIU is provided in the STSIU Remedial Investigation Report (RI; SRK 2008), the Site-wide ERA Report (Newfields 2005), the STSIU ERA (Newfields 2008), and the approved Work Plan (Arcadis 2008).

1.1 Background on Contaminant of Concern for Plant Communities

Based on laboratory phytotoxicity studies and plant community surveys, the Site-wide ERA stated that elevated concentrations of copper, combined with depressed soil pH, may lead to a potential risk of phytotoxicity for some areas of the Chino Mine Site, which could adversely affect the wildlife habitat quality provided by the vegetation community (Newfields 2005, Arcadis 2017b). Uptake of high amounts of copper into plants can cause iron deficiency, chlorosis, and stunted growth (McBride 2001). The

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[4] Cupric ion activity, referred to as pCu in this report, should be greater than or equal to 5 in areas where the total copper concentration is greater than 327 mg/kg to protect wildlife habitat and livestock rangeland (<327 mg/kg is background; pCu criteria are not needed for such low copper areas).

[5] See aerial photographs in Arcadis 2017a.

effects of copper on plants growing in Chino soils were shown to be highly dependent on soil pH (Newfields 2005, Arcadis 2017b). These studies also found that pCu was a predictor of potential impacts on vegetation species richness and to a lesser extent canopy cover, depending on the soil condition, slope, and amount of bedrock at a location (Arcadis 2017b). It was also noted that pCu correlated closely with differing species composition (Newfields 2005).

Estimating pCu in soil samples requires a sophisticated method using a calibrated cupric ion-selective electrode (Newfields 2005). Therefore, Newfields (2005) derived a simpler approach for estimating soil pCu using a site-specific regression equation, where pH and total copper concentration were found to be the input parameters most predictive of pCu. They developed such a regression for all areas, upland areas (with and without off-mine reference area data), and ephemeral drainage areas. For upland areas in the STSIU and upland reference areas (defined in the Site-wide ERA) that are the focus of this amendment study, the regression model using these two parameters was closely positively correlated with measured pCu values ($r^2 = 0.97$; Newfields 2005). This "upland with reference" regression model[6] was applied to all copper and pH data to predict pCu in soils for this pilot study. The method was validated during the final sampling event by measuring pCu with electrodes in October 2013 and comparing results to the predicted pCu. Hereafter, "calculated pCu" refers to pCu estimated from the Newfields (2005) regression on pH and copper, and "measured pCu" refers to pCu estimated from electrodes. When no prefix is given for presented data, pCu refers to calculated pCu.

Cupric ion activity is believed to be closely related to copper bioavailability because it measures the activity of the free copper ion (Cu^{2+}), which is the form of copper most easily taken up by plants (Barker and Pilbeam 2007). The lower the pH, the more copper converts to this free ion and becomes available to plants. The plant takes up the copper and, if it concentrates to toxic levels, may experience reduced reproduction, growth, and survival. Therefore, increasing the soil pH and reducing plant-available copper should be objectives of any selected remedial technologies.

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[6] Calculated pCu = 7.34 + 0.93pH- 1.15 ln(Cu).

1.2 Objectives and Hypotheses Tested

Chino is exploring if the use of lime (i.e., $Ca[OH]_2$) and organic matter amendments, with or without tilling, are effective and feasible remedial actions that ameliorate the elevated copper concentrations and depressed pH in surface soils within the STSIU. The study was designed to test whether these remedial actions increase pH, reduce copper concentrations, increase pCu, increase plant community cover and richness, and improve the plant community composition to include more favorable rangeland grasses and less undesirable (non-native, toxic) species. The 5-year monitoring after treatment was designed to determine if any observed improvements are sustained.

The overall objectives of this Amendment Study are to determine the:

- Effectiveness of tilling, lime, and organic matter application as treatment methods for long-term pCu improvement and stabilization
- Effectiveness of the amendments/tilling in reducing copper uptake by plants into stems and leaves from surface soils
- Effectiveness in improving quality (richness, cover, composition) of plant communities for wildlife and livestock through the reduction of bioavailable copper
- Extent of natural re-colonization (i.e., percent native species cover and species diversity) of vegetation after lime and organic matter amendments
- Determine which remedial technology or technologies are appropriate based on rangeland conditions and slope of the site in question.

The conceptual model is summarized for each of the three technologies as follows.

- Amending with lime will increase pH by neutralizing acidity, which will decrease free copper ion activity (i.e., raising pCu; Mortvedt 2000). These changes will be sustained over the 5-year period of the study because of the low acid generation potential (AGP) in the soils. The predicted increase in pCu will result in lower concentrations of bioavailable copper, decreased plant uptake of copper and lead, and increased plant species richness and percent cover.

- Amending with organic matter will further increase pCu in proportion to amounts applied by complexing with copper (Pandey et al. 2000), making it less available to plants.

- Tilling after the application of lime and organic matter will further improve pCu by dispersing the amendments through the soil layers and mixing more alkaline, high-copper soil with the less alkaline, low-copper soil in the subsurface.

This conceptual model was tested as a series of individual hypotheses in this report (see **Table 2** for specific hypotheses). Chino recognizes that the pilot study design was not amenable to comparing the effect of each individual remedial action to fully test the conceptual model, but rather, is restricted to evaluating the various combinations and conditions representative of the few plots treated. Therefore, information was reviewed from other report and events (white rain and road haul ripping) to supplement the study and inform the final conclusions.

Results of this study will be used to determine if amendments and tilling are effective remedial actions to address the elevated copper concentrations and depressed pH in the STSIU for full-scale implementation via an FS.

1.3 White Rain Event

In the years preceding the Amendment Study, surface soils in the STSIU exhibited elevated copper concentrations and depressed pH that extended eastward following a gradient consistent with wind-blown deposition from the smelter and tailing impoundments (Newfields 2005). On January 7, 2008, several months before amendment/tilling in the study area, a white rain event took place (Arcadis 2010a). During the event, a milky alkaline rain containing calcium oxides and hydroxides (e.g., lime) was deposited across southwest New Mexico, including the Chino IA. The white rain event stretched across Grant County, NM and included Gila Cliffs Dwellings National Monument, located 40 miles north of Chino. The pH measurements in the rainwater sampled at Gila Cliffs Dwellings National Monument are likely representative of the event, which is described in detail in the white rain report (Arcadis 2017a).

A rain water pH of 7.2 was obtained at a weather station at Gila Cliffs Dwellings National Monument. The pH average in rain water measured at the weather station ranged from 4.8 to 5.3 pH over the 20 years before this event. An increase in soil pH was observed in several areas of the STSIU, including the Amendment Study area, following this white rain precipitation event. Moreover, the calcium concentration in this rain was higher than had been observed in the previous 12 years (Arcadis 2017a).

Alkaline rains are not uncommon in arid regions around the world, as soils in arid regions are often high in carbonate (CO_3^{2-}), bicarbonate (HCO_3^-), and calcium (Ca^{2+}; Zhang et al. 2012a). The chemical makeup of the precipitation is dependent on the concentrations of the soil constituents and the chemical transformations that occur during cloud formation (Mouli et al. 2005). The source of the residues in the white rain event at Chino was found to be evaporates from playas to the southwest of Chino, as evidenced by the finding that 75 percent of the residues in the white rain matched the chemical signatures of the evaporites in the Willcox playa in southeastern Arizona and the Lordsburg playa in western New Mexico (Arcadis 2017a). Although alkaline rains regularly occur in many locations, the event at Chino, with enough alkaline minerals to produce a milky appearance in the rain, appears to be an infrequent occurrence.

A comparison of surface soil samples from 0 to 6 inches below ground surface (bgs) at Chino before and after (2009) the white rain event indicated an increase in soil pH across the STSIU (Arcadis 2017a). The persistence of the effects of the white rain was monitored annually for 5 years through 2014 based on the pH Monitoring Work Plan, dated July 2010 and approved by NMED in 2010. The results of this monitoring indicate that effects on the soil are persistent after 5 years and are presented in the 5-year final pH monitoring report referred to as the White Rain Report (Arcadis 2017a). These results were considered when performing this study and evaluating the results.

The 2008 white rain event slightly changed the conceptual model being tested. The white rain event essentially added a serendipitous treatment component to the study by adding readily available alkalinity before the Amendment Study was implemented. The white rain essentially allowed the study of the effects of liming alone. The white rain applied lime (calcium hydroxide and oxides were in the rain water; Arcadis 2017a) *de facto* on all the plots (including reference plots). This event allows evaluation of the effectiveness of alkaline rain events in increasing pCu and vegetation quality, and provides information on rates of natural attenuation of the adverse effects of copper thereafter.

The Work Plan initially described different lime application rates for each amended plot based on the 2006 pH data, but after the white rain increased pH on all the plots, the application rates were lowered to 1.3 tons per acre (t/ac) as $CaCO_3$ for each of the limed plots (**Table 1**). The white rain did not alter the conceptual model; the hypotheses on the effects of the amendments are as before, but the magnitude of the improvement from the amendments and tilling in pCu is expected to be lower because of the white rain already improving pH and pCu. The effect of the white rain first was tested by evaluating the hypothesis that pH and pCu increased, and plant tissue copper concentrations decreased, after the January 2008 event on both the amendment and reference plots. Any additional effects of the amendments and tilling were then evaluated.

2. Study Design and Description of Remedial Technologies

2.1 Study Design

The Amendment Study was performed on four square 0.25-acre (104 foot x 104 foot) plots (see **Figure 2**) identified as the:

- West amendment plot, representing good to fair rangeland condition (control plot)
- North amendment plot, representing fair rangeland condition
- East amendment plot, representing poor rangeland condition
- Northeast amendment plot, representing fair rangeland condition on steeper slopes.

Plots with different rangeland conditions may respond differently to the remedial technologies depending on their initial rangeland condition. Therefore, rangeland condition was considered when interpreting study results. Baseline rangeland conditions and criteria were determined in 1997 for the STSIU in rangeland polygons (polygon map is included in **Appendix A**) using methods derived by Woodward Clyde (1997). Many decision criteria on vegetation and soil condition were ranked within each polygon as good, fair, and poor (see field datasheets included in **Appendix A**) or ranked to develop an observed apparent trend (OAT) score (**Appendix B-19)**. The observer applied professional judgment across the criteria categories to determine a rangeland condition (good, fair, or poor, or a combination of two if the rangeland falls between classes).

The 1997 ratings were confirmed with later surveys in 2011 or 2014 using the OAT scores. The West plot rating of good-fair was confirmed in the field based on the OAT score for the West reference plot in 2011 ($\geq$ 22 OAT score is considered good-fair, see Arcadis 2011a). In 2014, an OAT score was also assigned to the East reference plot that confirmed its 1997 rating. The OAT score ratings in 2011 and 2014 were conducted with participation by NMED as part of field work for FS studies (2011 and 2014 OAT score sheets are included in the phytotoxicity report, Arcadis 2017b). The North and Northeast plots were not assigned field OAT scores in these later years, and instead were confirmed using a remote-sensing based map of “poor” and “good-fair” ratings that were based on the OAT score (if < 22, “poor”, if ≥ 22, “fair-good”). This predictive map (84% accuracy), developed for the FS, assigns both areas a “fair-good” condition, which confirms that the 1997 ratings are appropriate to characterize baseline rangeland conditions (before treatment).

Each of the four plots, including the West control plot, had an adjacent reference plot that was not treated (see **Figure 2**). These reference plots provide comparison data on the natural recovery of the soil and plant communities in areas with high copper content. The pCu values in the reference plots and other upland areas are predicted to improve naturally over time due to the cessation of the Hurley Smelter operations in 2002 and occurrence of the white rain event, though they are expected to improve more slowly than in the amended plots. The amendment plots and corresponding reference plots were located in areas with higher copper levels averaging between 1,100 and 4,800 mg/kg. Except for the West plots, these areas also exhibited low pCu (< 5) before the white rain event (**Table 1**).

Two or more of the three active remedial technologies of lime, organic matter, and tilling were applied to three of the four amendment plots, with the treatment protocol differing for each plot (**Table 1**). The most efficient way (in terms of cost-benefit) to address the hypotheses for this type of pilot study is to use sampling times as replicates with one control and one impact site sampled at the same time, with each sampling time represented as the difference between the impact and control (Stewart-Oaten et al. 1986). This allowed for the study to be efficient for a small, exploratory pilot study and to try the experiment on a small scale, given the initial limited knowledge on how the ecosystem would respond and given lack of information on which factors would be most variable and require the most replication.

Three plots were amended with lime and organic matter (North, East, and Northeast, see **Table 1**). Lime was applied in the same amount on the three plots, but organic matter was applied at three rates, with the highest (72 t/ac) in the Northeast plot, the next highest (47 t/ac) on the East plot, and the lowest (24 t/ac) on the North plot. Only two plots were additionally tilled: the North and East plots. The Northeast amendment plot was on a steep slope and was not tilled. The East amendment plot, representing poor rangeland condition, and the North plot, representing fair rangeland condition, were on flatter ground and could be tilled. Note that this study tested three rates of organic matter application but did not test the effect of not adding organic matter after liming and tilling.

The plot locations were shifted to a nearby location in some cases before application of the amendments. Two of the four amendment plots (North and Northeast) and their associated reference plots were moved just before amendment application (new location called “post-amendment plots” on **Figure 2**). This was due to the need for a more level surface to bring in equipment for amendment application (Northeast location) and to avoid excessive erosion (North location, see **Table 1**). The new locations were near the original locations. The data obtained from the plots before the move still were used to provide insight into baseline conditions before amendment application in these two general areas.

Reference plot locations close to the amendment plots were selected based upon similar species composition, topography, and soil type. These reference plots initially were used for vegetation sampling from 2008 to 2009, with sampling conducted on one 0.01 ha circular vegetation subplot within each 0.25-acre plot. No soil sampling for lab analysis was conducted on reference plots during those early years. However, soil pH was sampled using field paste pH methods in the 0.25-acre reference plots as well as in the adjacent amendment plot areas in May or early June 2008 after discovering elevated pH as a result of the white rain. These data were used in the statistical analyses requiring “before amendment” pH on reference areas (**Appendix C-1**) and in graphs showing pH trends. From 2010 through 2013, the reference plot sampling area was within the 0.25-acre square plots (of the same size and shape as amendment plots) and sampled for more extensive soil chemistry beyond pH in the same manner as the amendment plots. When copper concentrations were required for “before amendment” on reference areas for statistical analyses, data from the closest plot in the general vicinity of the reference plot sampled as part of the AOC background report (Chino 1995) or STSIU Remedial Investigation Report (SRK 2008) were used (**Appendix C-2**).

2.2 Description of Remedial Technologies

Lime

The white rain event reduced the large differences in pH among the three plots planned for treatment; therefore, the same amount of lime was applied at each of the three amendment plots, and the effects of only one application rate were monitored during this study as described in **Section 1.3**. The lime application rate was based on the soil chemistry documented in May 2008 following the white rain event (see **Table 1**), with a target of maintaining a more alkaline pH of at least 5.5 to 6.5. In 2006, the pH of the amendment plots to be treated ranged from 3.7 (North amendment plot) to 5.4 (Northeast amendment plot). After the white rain in 2008, just before amendment application, pH ranged from 5.7 (Northeast and East amendment plots) to 6.6 (North amendment plot).

The increase in pH between 2006 and 2008 was due to the alkaline deposition in the January 2008 white rain, which distributed calcium oxide and hydroxides (e.g., lime) across the area. Due to the relatively high pH values on the North, Northeast, and East amendment plots in 2008, the same lime application rate of 1.3 (t/ac) was used at three amendment plots. The application rate was consistent with guidance from the New Mexico State University (NMSU) Cooperative Extension Service (CES), which suggested an application rate of 1.5 to 2.0 t/ac for each pH unit increase. Due to its very high pH (> 8), no lime was added in the West amendment plot, and it became a control plot.

Lime amendments were applied as a slurry (oxide or hydroxide) using a modified water truck and a broadcast sprayer. In rough terrain, manual spraying was implemented when necessary.

Organic Matter

Manure from a nearby cattle farm was spread after lime application using a 966 backhoe loader (driving on plot), or manually when necessary. Application rates for the organic matter were varied to determine which rate would provide the best plant community response. The final rates selected differed from those suggested in the Amendment Study work plan (Arcadis 2010b) because manure chemistry data became available. The final rates were based on the assumption that 20 t/ac of manure will provide 2 percent additional soil organic matter (given that an acre-furrow slice of 6-inch depth weighs about 2,000,000 pounds) and that soils to be treated had approximately 2 to 3 percent soil organic matter (based on 0.7 to 1.07 percent total organic carbon [TOC] measured in 2006, see **Section 6**). The 20 t/ac for each 2 percent added was adjusted upward to 24 t/ac to add a 20 percent safety factor and to ensure that results meet success criteria, given high decomposition and oxidation rates of organic matter in semi-arid areas with warm, sandy soils (Parton et al. 1993). The organic matter in soils generally does not exceed 8 percent (NRCS 2001, 2013); therefore, the initial target soil organic matter percentage range was between 3 and 7 percent, with a target of maintaining the percentage over the long term at 3 percent. To meet this target would require organic matter additions ranging from 24 to about 48 t/ac. It was noted that, however, unlike the other plots, the Northeast plot is on a steeper slope (see **Table 1**) and organic matter additions may partially run off after application (which was observed). Therefore, the Northeast plot organic matter addition rate was increased to 72 t/ac to allow for sufficient organic matter to infiltrate into the soils during natural rain events, offsetting the losses possible with runoff. The East amendment plot was assigned approximately 48 t/ac (actual application was 47 t/ac) because it was of “poor” rangeland condition (see **Table 1**), and the North plot was assigned 24 t/ac.

Organic matter was selected not only because the dissolved organic matter from the manure may bind copper, decreasing copper availability to plants initially (Schnitzer and Kodama 1977), but also because it will enrich the soil, increasing plant productivity. Increased plant productivity forms more stable humus that provides for long-term binding of copper within the root zone of the soils (Pandey et al. 2000), especially at moderate to high pH (Suave et al. 1997). Application of animal manure can sometimes create problems, however, such as being a source of high copper concentrations (if cows receive high amounts of mineral additives; Zhang et al. 2012b); a source of acidity; and containing seeds of weedy annuals, some that can be toxic to livestock when consumed in large amounts. The animal manure was tested and did not exhibit high copper levels (~250 mg/kg, see **Section 6**).

Though ammonium present in the organic matter and released through future ammonification will undergo nitrification and release acidity to the soil, measurable decreases in soil pH through nitrification are most often associated with high application rates of highly soluble inorganic nitrogen fertilizer, such as ammonium nitrate application in larger-scale agricultural operations. The ammonium present in organic matter applied as manure in this study will be released much more slowly, and only a fraction of the ammonium released will undergo nitrification; the remainder will be taken up directly by plants, synthesized by soil heterotrophs, and some will become fixed by soil minerals. The addition of lime in conjunction with the organic matter also provides an additional level of protection from depressed soil pH.

Tilling

When tilling was specified by the Amendment Study, all vegetation was cleared and grubbed within the pilot study areas in May 2008 using a bulldozer and/or excavator. Tilling was subsequently completed using a 140 cm wide tilling blade with teeth to cross-rip the organic material into the soil to a depth no greater than 8 inches bgs. In the East plot, it was not possible to till the soil using standard machinery due to the rocky nature of the soil. Therefore, the plot was ripped rather than tilled. For the purpose of this study, tilling refers to either tilling or ripping of the substrate.

Soil ripping has been shown to be an important component of revegetation success in other areas of the STSIU. The results of the Golf Course – Interim Remedial Action (Arcadis 2014), showed that soil ripping to 2 feet, seeding, and hydromulch following surface removal of a few inches of soil is an effective preparation method for revegetation.

In addition, roads throughout the STSIU were effectively revegetated using ripping with no seeding or other amendments. It follows that tilling or ripping of site areas exhibiting sufficient equipment access and appropriate terrain slopes may be a viable remedial technology. To evaluate the effect of tilling or ripping alone, which was not directly assessed on the amendment plots (though it was statistically evaluated by comparing tilled and untilled plots), photographs and site observations of the reclaimed haul roads ripped to 12 to 18 inches deep were reviewed and compared to results from amendment plots that were tilled and amended, as described in **Appendix B-21** (see Photos No. 6 and 7 for September 2014 in **Appendix D** and closeups of vegetation in **Appendix B-21**).

2.3 Best Management Practices

Two best management practices (BMPs) were used to reduce erosion on the amendment plots. Silt fencing was used around the perimeter of all four plots. A wattle was also used in the middle of the North amendment plot to further maintain soil stability. Seeding of the disturbed areas was initially considered as a third potential BMP if 70 percent of the average percent native cover of adjacent reference sites was not achieved before the second rainy season following implementation. However, by October 2009, the average native cover on the amendment plots exceeded 70 percent of the reference plots (Arcadis 2011b); therefore, a native seed mix was not applied.

3. Success Criteria

Success of each remedial technology was evaluated using the following criteria associated with the primary metrics measured for success, which were pCu, plant copper uptake, plant richness, plant cover, and plant community composition:

3.1 Sustained Increase in pCu

In this study, pCu was used as a measure of plant-available copper in the soil. A statistically significant and sustained increase in pCu to greater than 5.0 was preliminarily established as the success criterion because the pre-FS RAC for acceptable soil pCu is $\geq$ 5.0 in areas with copper concentrations exceeding 327 mg/kg (NMED 2011). This success criterion could change after reviewing results of studies completed to inform the FS after the criterion was set (Arcadis 2017a, Arcadis 2017b). Statistical significance of a difference (hereafter referred to as a significant difference) is defined as $P < 0.05$ for all analyses with $n > 6$ for a statistic, and at $P < 0.10$ for a few tests with smaller sample size because of low power (given variability in the samples) to detect differences.

Note that another measure of copper availability was evaluated to improve understanding of mechanisms and interpret results, but is not a primary metric for measuring success, and is considered a “supporting” metric. Specifically, copper leachability within the top 6 inches of soil, as a measure of copper solubility in water, was compared to pre-amendment baseline conditions and adjacent untreated reference plots as another indicator to evaluate success. Synthetic precipitation leaching procedure (SPLP) evaluates the potential mobility of copper from soils upon contact with natural precipitation. If soluble copper by SPLP (referred to herein as soluble copper) is not significantly reduced by the treatments or relative to the adjacent reference plots, the treatments might be considered unsuccessful.

Soluble copper was evaluated because the Site-wide ERA identified it as correlated to plant toxicity endpoints, but it was not as strongly correlated as pCu (Newfields 2005). This is expected considering that soluble copper includes complexed copper species, such as dissolved organic carbon complexes. Such complexes are not taken up by plants (Sauve et al. 1997), and if the addition of organic matter increased these complexes, soluble copper may not decrease. A potential lack of success with respect to this parameter, therefore, must be evaluated in this context and, for this reason, is just a supporting metric, not a primary metric key to determining success of the technology.

Lime was intended to increase soil pH, which should then increase pCu and improve conditions for plant survival and growth. Thus, pH was also evaluated for success as a supporting, rather than primary, metric by determining if the target pH of greater than or equal to 5.5 was achieved and then sustained over the 5-year monitoring period. Initially, an upper bound of pH of 6.5 was provided as a guideline in the approved Work Plan. However, the upper bound is inappropriate because plant communities have adapted to higher pH soils typical of New Mexico (e.g., 6.5 to 8.0; Flynn 2012, see discussion in Arcadis 2013), and these higher pH values (greater than 6.5 s.u.) potentially can be beneficial and further reduce availability of copper to plants (e.g., Elbana and Selim 2011).

Similarly, the lower bound pH of 5.5 is a general guideline, and most important to achieve in soils with high copper, and is less important in soils with low copper (e.g., less than 327 mg/kg as defined by the pre-FS RAC). Thus, pH is a supporting metric because ultimately, plants are responding to the combination of copper and pH, quantified as pCu, rather than pH alone. Similarly, net neutralization potential, measured as part of acid base accounting (ABA), supported interpretations of the observed persistence of pH increases.

3.2 Reduction of Copper in Plant Tissue

A reduction in uptake and translocation of copper into leaf and stem tissue was evaluated by sampling plant tissue to directly assess effects on the plant of the change in bioavailability of copper (as measured by pCu). Success is indicated by a statistically significant reduction in copper in plant tissues following amendments and relative to reference plots. For this report, uptake of copper is defined as uptake of copper into the aboveground stems, leaves, and reproductive parts of the plant.

3.3 Increased Plant Cover and Richness and Improved Community Composition

The percent cover and species richness (number of species) of the plant community present in amendment plots after 5 years were compared to data collected before amendment/tilling treatments and from adjacent reference sites. Success is considered an increase in these parameters 5 years after treatment and compared to reference plots (unlike pCu, the increase is not expected 1 year after treatment because it takes time for plant communities to respond to soil chemistry changes). Success is also measured by a change in the community composition that improves wildlife habitat and livestock range.

The supporting metrics for evaluating community composition included Shannon diversity and Shannon evenness (Gotelli and Chao 2013). Shannon evenness is a measure of the relative proportions of each species, with even proportions indicating lack of dominance by any one species. Shannon Diversity combines evenness and richness to develop an index to overall diversity.

Other soil variables evaluated as supporting metrics that influence plant communities were TOC and carbon:nitrogen (C:N) ratio. The ideal target for good community development following the treatment disturbance is an organic matter content of at least 3 percent, equivalent to approximately 1% TOC (Konare et al. 2010) and a C:N ratio between 8:1 to 15:1 (Ward Laboratories 2014). However, as long as C:N is less than 20:1, a ratio below which NH_4^+ becomes available to plants through nitrogen mineralization (Whalen and Sampredo 2010), the soil metric was considered acceptable and met the remedial objective. C:N ratios below 8:1 result in volatilization and loss of nitrogen, which is less than ideal, and may hinder community development. The 3 percent organic matter target is an intermediate level of organic matter believed to be achievable in sandy soils.

Other nutrient concentrations were evaluated as supporting metrics to help interpret the primary metric results including nitrate/nitrite, ammonia, total Kjeldahl nitrogen (TKN), and total calcium and potassium.

3.4 Vegetation Establishment Success Guidelines

Before assessing the primary or secondary metrics, the treated plots must first meet vegetation establishment success criteria to show that native communities re-establish. In other words, if predominately native vegetative communities cannot re-establish after amendment/tilling, remediating to reduce phytotoxicity is counter-productive because the disturbance would have caused a greater reduction in services than the reduction in copper bioavailability.

Short-term (2-year) and longer-term (5-year) success criteria were established to evaluate vegetation establishment after disturbance from amendment and tilling activities (Arcadis 2011b). The criterion for the short-term goal of vegetation re-establishment was defined as native vegetation cover greater than 70 percent of the native cover of adjacent reference plots (Arcadis 2008) before the end of the second rainy season. The goal of the short-term criterion was to provide a benchmark for the amount of cover needed to limit problems associated with soil erosion and from not seeding.

In general terms, the longer-term 5-year success criteria for vegetation re-establishment include:

- Colonization of a diversity of native species important to a native plant community typical of the region, where important species are defined as perennial grasses and forbs of high quality for livestock and wildlife
- Development of horizontal and vertical complexity (heterogeneity) important to wildlife habitat (i.e., development of multiple vegetative strata including shrubs)
- Low proportion of exotic/invasive plant species characteristic of areas of natural and/or anthropogenic disturbance
- Increasing total vegetation percent cover and decreasing total percent cover of bare soil.

NMED requested that the success criteria from the Closure/Closeout Plan (CCP) reclamation guidelines based on the Tailings Reference Area just west of Tailing Pond 7 be used as the specific, quantitative, long-term criteria for the Amendment Study after 5 years. Those criteria were developed for a 12-year-old restored plant community (Daniel B. Stephens & Associates, Inc. 1999 and Chino 2007). Therefore, not all of these criteria may be met in the 5 years during which the vegetation community was evaluated. The CCP requirements are provided in **Table 3**.

4. Monitoring Activities

The following section provides an overview of the Amendment Study monitoring activities including the monitoring approach, BMP inspection, and soil and vegetation sampling and analysis.

4.1 Overview and Work Plan Modifications

As discussed previously, the monitoring approach described in the Work Plan evolved over time. Additionally, statistical power analyses conducted after 3 years of sampling (described in Arcadis 2012) led to increasing sample sizes for surface soils for years 4 and 5. The monitoring approach included the following tasks:

- **Establish and Monitor Baseline Conditions:** Baseline soil conditions were established and monitored with lab analyses of the soil at the four amendment plots. Baseline conditions at the reference plots were established in March 2008 (see **Table 1,** copper was not sampled in 2006 but was sampled in 2008). Vegetation baseline conditions were established on the four amendment plots in March 2008 by sampling the cover by species, total vegetative cover, and aboveground plant tissue for copper concentrations. These same variables were sampled on the reference plots except for copper concentrations in plant tissue. Soil pH also was sampled in May 2008? or June 2008 on reference plots. Note, the white rain fell between the two (2006, 2008) baseline sampling events.

- **Post-Amendment BMP Inspection:** BMPs were inspected through one rainy season for effectiveness and repair as necessary. Each plot was inspected to assess the integrity and effectiveness of installed BMPs. Inspections were conducted at 2 weeks, 6 weeks, 6 months, and 18 months after amendment implementation.

- **Post-Amendment Soil Sampling and Analysis:** Sampling and analyses of soils was conducted semi-annually for 5 years in the amendment plots and 4 years in the adjacent reference plots (starting in 2010 on reference plots, except pH was also sampled in 2008, see **Table 1**). The exception was ABA, which was conducted once on amendment plots in December 2008 and annually in the fall on adjacent reference plots from 2010 to 2013. Except for pH, reference plots were not sampled before amendment application or in 2008 and 2009 because, unlike vegetation, soil data in reference plots were not part of the success criteria. However, starting in fall 2010, in response to NMED comments on the Year 1 monitoring report (NMED 2010) and recognizing the high variability in soil parameters on the amendment plots, reference plot soils were sampled to evaluate the degree of change caused by temporal and spatial variability unrelated to the amendment application. Measured pCu was sampled only once in October 2013.

- **Post-Amendment Vegetation Sampling and Analysis:** Vegetation was sampled and analyzed in the first (December 2008), second (October 2009), third (April and October 2010), and fifth (October 2013) years following amendment to evaluate community composition and vegetation colonization. The short-term percent cover targets were met during the first monitoring season; therefore, it was agreed that semi-annual or yearly monitoring of vegetation provided little benefit to the overall study. The final vegetation survey was completed during year 5 (fall 2013). This approach is consistent with CCP recommended protocols (Daniel B. Stephens & Associates, Inc. 1999 and Chino 2007), which require sampling in the fall, and provided enough data to assess effectiveness of amendments and tilling in increasing plant cover and richness. Plant tissue was sampled in 2013 at the amendment and reference plots to evaluate concentrations of copper in aboveground biomass.

4.2 Monitoring Soil Conditions

Before implementation of the Amendment Study, baseline soil sampling was conducted within the four amendment plots in July 2006 and May 2008. The 2006 soil sampling was reconnaissance sampling, and thus was not as extensive as sampling conducted in 2008. Baseline sampling was conducted to establish a pre-amendment condition to which subsequent data analyses could be compared. The 2008 baseline soil data allowed for assessment of the effects of the amendments/tilling on soil chemistry rather than white rain, whereas the 2006 soil data compared to the 2008 soil data allowed an assessment of the role of white rain. Post-amendment soil sampling was semi-annual from December 2008 to October 2013 and was more extensive.

4.2.1 Baseline Soil Sampling

Soils were sampled for pH, TOC, nitrogen species, and copper (total and soluble) in 2006 and 2008 to estimate baseline soil conditions prior to the Amendment Study. Within each of the amendment plots in 2006, a soil sample was collected at a single random surface location (**Appendix C-3**), at 0 to 4 inches or 0 to 5 inches bgs (the East plot with windblown tailings on the surface was further split into 0 to1 inch and 2 to 4 inch strata). In 2008, about 1 month before application of the amendment, the number of random samples was increased to two samples per plot and two depth strata in order to better capture soil heterogeneity. At each sample location in 2008, soil was collected from the surface (a depth of 0 to 6 inches) and subsurface (targeted 18 to 24 inches if possible).

The shallow surface sampling specifically focused on soil within the target mixing zone (i.e., top 75 percent of the tilling zone), whereas the deeper sampling was intended to monitor for the potential downward migration of amendments through the soil column over time and show whether copper or acidity have changed over time with depth in the lime-treated plots, indicating some migration of hydrogen or cupric ions after treatment. A hard pan clay layer underlies the soil throughout the study areas, and the depth of deeper samples was adjusted accordingly. Specifically, the deeper samples were collected in the lowest 6 inches of the deep stratum (if clay hard pan was present, from top of clay hard pan layer upward for 6 inches). The hard pan clay layer was too difficult to penetrate during soil sampling, and the depth of the subsurface samples was selected based on the assumption that leaching does not occur below this clay hard pan layer. Actual sample depths for subsurface samples collected from 2008 to 2013 are provided in **Appendix C-4**.

4.2.2 Post-Amendment Soil Sampling

Following amendment application, from December 2008 to 2011, two or three soil samples were collected at each amendment and reference plot at depths of 0 to 6 inches (**Appendix C-3**) and 18 to 24 inches (adjusted depending on clay hard pan layer depth), as detailed above for baseline soil sampling (see **Appendix C-4, C-5** for subsurface data). Random (rather than permanent) sample locations were established to evaluate the changes in the soil concentrations throughout the study area and capture spatial variability. However, variability was found to be high, and sample size was increased from two or three up to eight samples to estimate total copper, soluble copper, pH, and pCu in surface soils in 2012 and 2013 to increase the statistical power to detect significant differences (see Arcadis 2013 and **Section 7.2**). Sampling protocols established for subsurface soil and other parameters for surface soil were not changed.

4.2.3 Soil Analytical Methods

Soil samples collected for the Amendment Study were subjected to the testing program detailed below. Samples were air-dried at 34 degrees Celsius before analysis, and all estimates were based on dry weight.

Total Copper: Total copper in soil was determined by subjecting samples to acid digestion using U.S. Environmental Protection Agency (EPA) 3050B followed by inductively coupled plasma-atomic emission spectroscopy (ICP-AES) analysis (EPA 6010B) with a method detection limit of 1 mg/kg.

Soil pH: Soil pH was analyzed using deionized water at a 1:1 soil to solution ratio (EPA 9045C) or saturated paste.

Soluble Copper: Soluble copper was determined by modified SPLP (EPA 1312) using a 5:1 ratio with $CaCl_2$ extraction fluid without pH adjustment. The method was inadvertently switched to the standard SPLP method, which is based on a 20:1 water to sample ratio, using deionized water adjusted to pH 5, when laboratories were switched from SVL Analytical (Kellogg, Idaho) to ACZ Laboratories (Steamboat Springs, Colorado) from fall 2011 through spring 2013. Samples collected in fall 2013 were subjected to both methods. Comparison of results (see **Section 6**) showed that a scaling factor was not appropriate; therefore, the associated statistical analyses were based on the soluble copper by the modified 5:1 ratio method (20:1 ratio samples were dropped from the analyses).

Nutrients: The nutrient analyses included nitrogen speciation (nitrate/nitrite as N-soluble [EPA 3533.2], ammonia as N [EPA 350.1], TKN [SM 4500]), TOC by EPA 9060 or ASA No. 9 29-2.2.4, and calculated C:N).

ABA: Soils subjected to ABA were sieved to less than 250 microns (µm) following standard procedures. The ABA included measurement of neutralization potential and sulfur forms (total sulfur, pyritic/sulfide sulfur, sulfate sulfur, and organic/insoluble sulfur) using the Modified Sobek procedure (EPA M600/2-78-054), specifically:

- Neutralization potential in percent as calcium carbonate ($CaCO_3$) was determined using EPA M600/2-78-054 3.2.3, with a 0.1 percent method detection limit. The laboratory calculated acid neutralization potential (ANP) in t $CaCO_3$ per kiloton (t $CaCO_3$/kt) by multiplying the neutralization potential by 10.

- Sulfur forms (total, pyritic/sulfide sulfur, sulfate sulfur, and organic/insoluble sulfur) were determined using EPA M600/2-78-054 3.2.4 with a 0.01 percent detection limit. Total sulfur content was determined by combustion via Leco furnace. Sulfur forms were analyzed on separate sample aliquots, with a subsampling digested in hydrochloric acid (HCl) and another digested in nitric acid (HNO_3). The term pyritic sulfur (or pyritic/sulfide sulfur) is used; however, this methodology does not distinguish between pyritic (FeS_2) and non-pyritic sulfide minerals (e.g., CuS).

- The acid generation potential (AGP) in t $CaCO_3$/kt was calculated by the laboratories or Arcadis by multiplying the sulfide sulfur content (reported as pyritic sulfur by SVL and pyritic/sulfide sulfur by ACZ laboratories) in percent by a conversion factor of 31.25, based on acidity generated by pyrite oxidation (assuming all sulfide sulfur oxidation is represented by pyrite oxidation).

ABA results were used to determine the neutralization potential ratio (NPR = ANP/AGP) and net neutralization potential (NNP), where NNP is the difference between the ANP and AGP (i.e., NNP = ANP - AGP). These criteria are commonly used to categorize material into potentially acid-generating (PAG) or non-potentially acid-generating (non-PAG). Numerous interpretation schemes have been developed to assess the potential for acid generation using either criterion. For example, a sample with an NPR less than 1.0 will typically be characterized as PAG, whereas an NPR greater than 2.0 represents a non-PAG sample (i.e., at least twice as much ANP as AGP). A sample with NPR values between these designations is considered to exhibit uncertain acid-generating characteristics (Arcadis 2017a). The New Mexico Mining and Minerals Division (MMD) soil and overburden suitability guidelines, which are directly applicable, rate soil material as good based on an NNP of -5 t $CaCO_3$/kt or greater and unacceptable based on an NNP of less than -5 t $CaCO_3$/kt (MMD 1996).

Measured pCu: The Cu^{2+} activity in soil, reported as pCu, was measured only in October 2013 using a calibrated Cu^{2+} Ion-Selective Electrode (Cu-ISE) as detailed in Arcadis 2014. The Cu-ISE was calibrated in an aqueous solution containing a specified concentration of dissolved Cu and adjusted to a variety of pH values to produce a corresponding variety of pCu values. The resulting pCu calibration curves were used to calculate the pCu of soil extracts from the Cu-ISE millivolt (mV) readings (**Appendix C-6**).

Calculated pCu: pCu data reported herein are calculated from total copper concentration and pH unless specified otherwise (as measured). The equation used to determine calculated pCu values is discussed and presented in **Section 1.2**.

Additional Analyses: Total calcium and potassium were determined by acid digestion using EPA 3050B followed by ICP-AES analysis (EPA 6010B).

The approved Work Plan (Arcadis 2008) did not require the soil samples to be sieved before analysis. Soils collected from the Amendment Study areas were not sieved in 2006, 2008, 2009, or 2010. However, the Pre-FS RAC (NMED 2011) data are based on sieved samples, and thus, the FS will use results from sieved soil. For consistency with the FS, soils were sieved for copper and pH analysis to less than 2 mm in spring and fall 2011 and 2012. Regression equations displaying a strong, significant relationship between sieved and unsieved soils were developed by analyzing sieved and unsieved soils for pH and copper in spring 2011 (Arcadis 2012). Equations were:

- $pH_{sieved} = 1.2424pH_{unsieved} - 1.8933$, $r^2 = 0.82$, $P < 0.001$;
- $Cu_{sieved} = 1.0341Cu_{unsieved}+233.13$, $r^2 = 0.86$, $P < 0.001$

Unsieved soils tend to exhibit lower copper concentrations and higher pH, though estimates did not show large changes (see Arcadis 2012 comparison). All pH and copper measured in years for which soils were not sieved were adjusted to estimate sieved values using the regression equation. The results in the tables and text of this report are based on sieved or estimated sieved values.

4.2.4 Statistical Analysis of Soil Data

Effect of Amendments and Tilling. This section provides an overview of the statistical Before-After-Control-Impact (BACI) design used to evaluate whether significant changes from the amendments/tilling were observed in the soil during the Amendment Study. McDonald et al. (2000), Smith (2002), and Schwarz (2015) explain the BACI method and provide other references. The BACI design examines the Before (pre-amendment baseline) and After (post-amendment) conditions of the area, as well as comparing a Control (reference site) with the Impact site (remediation site). The pre-amendment conditions in this analysis exclude conditions before the white rain so that the effectiveness of the amendment/tilling alone can be evaluated.

Before and After sampling determines how the remediation process changed the Site through time from its trajectory had the treatments not been applied. Control and Impact sampling will identify if the change occurring ostensibly from the remediation (impact site) also occurred in the untreated reference site (control site), and thus was not from the remediation. The BACI design allows discernment of effects of remedial actions from natural variability and underlying trends in the larger area. For example, BACI data analysis can compare pre- and post-amendment pH and provide confidence that a difference in pre- and post-amendment pH is due to the amendment activity rather than a regional or locational effect that is changing both the reference and amended plot in the same direction.

Figure 3 illustrates how BACI data are compared to detect if there is a significant change in the mean of a parameter immediately after the impact relative to a control plot (e.g., if significant interaction term in a two-way analysis of variance [ANOVA]). The BACI analysis was conducted on pH, total copper, and pCu. Data on reference plots or similar nearby areas were unavailable for the pre-amendment period for the other soil constituents (soluble copper, TOC, C:N).

The “impacts” tested in this BACI analysis were: (1) lime and organic matter application, which should increase pH and pCu, and (2) “tilling,” which should decrease total copper and increase pH and pCu by mixing the copper and lime in the top 6 inches of soil with lower subsurface soil (designed to assist plant establishment). The BACI only evaluates the change in means in two periods (the before and after periods), not persistence of the initial impact (treatment).

Mixed model ANOVAs were used for the BACI analysis. A mixed model ANOVA evaluating differences in means of soil parameters includes “fixed” factors and “random” factors, where a factor is a categorical variable. Fixed factors of plot type (amendment or reference plot) and period (before, after) are the focus of the investigation. Fixed factors test two main effects to evaluate amendment (lime, organic matter) effectiveness: Main Effect 1, which compares means of amendment plots vs. reference plots, and Main Effect 2, which compares means of the pre-amendment period vs. post-amendment period. Most importantly, the interaction of these two fixed factors is tested (amendment vs. reference x pre-amendment vs. post-amendment) to determine if the treated plots respond differently between the pre- and post-treatment period than the untreated plots.

If the interaction is statistically significant ($P < 0.05$), then the treatment had an effect. To evaluate tilling, the same factors are investigated, except the Main Effect 1 compares tilled plots to all untilled plots[7]. The Main effect 1 and 2 of the ANOVA may or may not be significant, but their significance is not important to the interpretation of the results. For example, if both the reference and amendment plots significantly increase pCu after amendment application, the increase cannot be presumed to be from the amendment unless the amendment plot increased more than the reference plot (see **Figure 3**). This

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[7] Untilled plots include untreated plots and plots amended but not tilled.

larger increase would be demonstrated by a significant interaction term and different magnitude of change in the means in the ANOVA results.

Random factors influence the comparisons and must be included but are nuisance factors measured on a subset of units from a larger population of units in the area. For example, the four plot locations are selected from a very large population of possible plot locations on the STSIU. Ideally, the locations should be randomly selected or at least representative of the larger population, but the model is fairly robust to deviations from the ideal. The model assumes that selected plots are representative of the main habitats in the STSIU. Though there is uncertainty in that assumption, it was believed to be reasonable.

Results also can be strongly influenced by the characteristics of the habitat at the plot location (slope, rangeland condition, geology) regardless of treatments. Plot location (North, West, East, Northeast) is included as a random factor (nuisance variable) that must be taken into account to assess the effect of the treatment. Sampling event (season, year) is also a random factor nested within the larger pre- and post-amendment periods. The sampling events in the model are a subset of many possible sampling events over the years, and should be representative of the time period of interest (fall or spring season of each year during study), which they mostly are—spaced every half year with some exceptions (they are systematically spaced over time to capture the characteristics of the period).

The pre-amendment period is very short but represents an interval in time (half year) similar to the the post-period units[8]. A random factor interaction term (multiplying plot location by sampling date nested within period) was included in the model because interactions are possible between plot and sampling event. The least square means for the four categories of the main effects (e.g., pre-amendment amendment plot, post-amendment amendment plot, pre-amendment reference plot, post-amendment reference plot) are the ANOVA means, which are simply the soil means at each plot location within a sampling date averaged across these four categories. Each mean is given equal weight (not weighted by sample size when averaged) when calculating the

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[8] 2006 originally was planned to be part of the baseline but when the white rain event happened, it could no longer be included because it would represent effects before both the white rain and treatments, not just the treatments.

least square mean to prevent any biases toward a plot location or date that had a higher sample size in the analysis.

As shown in **Table 1**, soil data for copper and pCu collected following the Work Plan for the pre-amendment period were not collected on the adjacent reference plots until 2010, which could have prevented the use of the BACI design for the Amendment Study for all but pH due to the lack of available data on reference plots before amendment application. For pH, data were available for the BACI because 5 months after the white rain in May 2008, field soil paste pH in 0 to 6 inch depth soil was sampled in the reference and amendment plots before the amendment application in June 2008. These pH data were used as pre-amendment pH data for the BACI. Ten surface soil samples (0 to 6 inches), each from the amendment and reference plots, were analyzed using field paste pH methods for each location (80 samples total, see **Appendix C-1**). These data were collected to better understand the large increase in pH observed, which was later determined to be from the white rain.

Two additional 0 to 6 inch samples on the amendment plots were sent to the laboratory for pH analysis on the North, Northeast, and East plots in accordance with the Work Plan (results in **Table 4** and **Appendix C-3**). For those three plots, the results using field paste pH methods combined with laboratory samples were not significantly different from laboratory soil pH data collected in the same plots during the same sampling event (two-way ANOVA with factors of plot and method, $P = 0.294$, data shown in **Table 4**). Therefore, the combined pH field and laboratory data in 2008 were deemed adequate for evaluation of white rain effects and for the BACI analysis.

To fill the data gap for copper data (and pCu, which is calculated from copper data) missing on adjacent reference plots before treatment, copper concentrations in soil collected in areas near the amendment plots in the 1990s and early 2000s (reported in other reports) were used. These data often are less collocated spatially with the amendment plots than the data collected on the reference plots. Data collected on the adjacent reference plots that were part of the study design are referred to herein as “collocated” with the amendment plots because they were collected at a short distance of 272 feet or less from the treated plots (**Figure 2**). The newly added locations are referred to as “less collocated” data to fill the data gap. The less collocated data were collected within 1,130 feet, recognizing that some were much closer (one at 139 feet distance; most were within 660 feet, shown on maps in **Appendix C-2, Figure C-2-1 and C-2-2**). The less collocated copper data came from the STSIU RI report (SRK 2008), sitewide ERA (Newfields 2005), and AOC background report (Chino 1995).

With one exception, the less collocated plots are in the same geologic unit (**Figure C-2-1 in Appendix C-2**) and soil category (**Figure C-2-2**)[9] as their nearby amendment plots, and thus are likely representative of the nearby amendment plots. The one exception was the less collocated plot U04-1037 used for the North amendment plot's reference, which was on an ash-flow tuff (Trt) rather than a rhyolite-based fan deposit (Qfr) and a relatively flat rocky type rather than relatively flat granular soil type. However, pH from this plot (and other less collocated plots) was not used, just its total copper concentration (for pH, the adjacent collocated plot's pH was used).

Total copper on average probably would not change much whether deposited by the smelter on ash-flow tuff rocky soils or rhyolite-based, more granular soils. As long as its distance from smelter is similar to that of the amendment plots, even this plot should not represent a copper concentration biased high or low. The greater issue is the high variability in copper within and among locations, as discussed below.

The less collocated copper data are reported in **Appendix C-2**[10] and were treated as pre-amendment reference copper data to complete a BACI analysis for total copper and pCu. In addition to their spatial proximity, these data were deemed acceptable because copper concentrations, though variable due to spatial heterogeneity of the soil, have not changed greatly over this time period (1995 to 2004, see Arcadis 2017a). The less collocated copper data and calculated pCu data (calculated in **Appendix C-2** using the collocated pH with the less collocated copper data) are shown on **Figures 4a** and **Figure 4b**, but are not connected by a line to the other data because they are estimates. These reference data are included to better approximate the variability and trend in pCu from events unrelated to amendment and tilling, including mine operation changes, changing laboratory conditions, long-term effects from the white rain, and variable climatic effects. Smokorowski and Randall (2017) discuss the advantages of BACI analyses, if designed correctly, over suboptimal designs without reference data, and they discuss uncertainty around poorly designed BACIs. Using different reference plots in early years from those in later years creates uncertainty, however, because copper differences may be due to inherent differences in the copper concentrations of the different reference plots, rather

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[9] Soil categories are defined in the phytotoxicity study (Arcadis 2017b) as: bedrock, slope, flat granular, and flat rocky soils (see map in **Appendix C-2-2**).

[10] After copper data were standardized to 0-6 inch depth and 2 mm sieve, as shown in Appendix E of the white rain report (Arcadis 2017a).

than representing trends in untreated plots over the early year period (prior to 2010). Consequently, copper and pCu statistical comparisons without the less collocated plots were also conducted. Specifically, the means of these two constituents were compared across space and then time.

For the comparison across space, collocated reference plot estimates, averaged over the post-treatment period of 2010 to 2013, were compared to amended plot averages for the same period for the following constituents: pH, copper, pCu, soluble copper, TOC, and the C:N ratio. This analysis was conducted for each individual plot location, and provided supporting information for copper and pCu that does not rely on less collocated data (the other four constituents never relied on less collocated data). For this comparison across space, ANOVAs were run separately on each of the four locations (North, West, East, Northeast), and year was included as a blocking factor to avoid biasing results toward years with more samples.

If the reference plots had the same average values as amendment plots before treatment, improved values after treatment on the amended plots would indicate remedy effectiveness. However, this approach assumes that copper and pCu averaged the same values in the amendment and reference plots before treatments were applied, which was unlikely because pH was different between the two plots before treatment (**Appendix C-1**). Therefore, a second comparison (a comparison in time) was conducted without the less collocated plots or any reference plot data. Pre- and post-treatment period means were compared for copper and pCu on the amendment plots. Results are presented in the Alternative Analyses in **Section 7.2.2**, and all analyses of pCu and copper compared to identify the uncertainty in the results. Overall, the alternate analyses for copper and pCu did not change conclusions obtained from the BACI.

A BACI analysis could not be completed for soluble copper, C:N, or TOC because reference data before amendment application were unavailable. Not being primary metrics, these are less critical for interpreting trends over time than pCu; hence, the other methods of analysis, comparing effects in space and time separately, were employed for these. Evaluations were conducted with: (1) ANOVAs for each location comparing soil means of reference and amended plots averaged over the 2010 to 2013 period as discussed above and (2) mixed model ANOVAs comparing amendment plot means in May 2008 before a particular treatment (lime and organic matter, till) and afterward for one or two sampling events with no reference plots included. For the second comparison across time, all locations were included in one ANOVA, and plot location was included as a random variable. For TOC and C:N, 2006 data were available, and thus the pre-amendment period for the comparison in time was the mean for two sampling events

(July 2006 and May 2008) based on the assumption that the white rain between these periods likely did not impact these soil variables. Also, because changes from the added organic matter appeared to be slow to incorporate into the soil, TOC and C:N were evaluated for two sampling events after amendment application (after 6 months and 1.5 years).

Because the BACI design does not evaluate persistence of the effect of the treatment (only compares means of before and after period), a separate persistence analysis was conducted on the 5 years of data collected after amendment application. This analysis evaluates if the slope of the linear regression in a parameter (e.g., pH) over time was not significantly different from zero, meaning the value of the parameter in each post-amendment sampling event has remained relatively constant over time (can fluctuate but is not increasing or decreasing) and thus is persistent. If the BACI analysis supported that the amendment caused the initial change predicted for the parameter (e.g., initial increase in pCu) and then the linear regression shows that the parameter remained constant for 5 years, one might conclude that the hypothesis of the predicted change being sustained for 5 years was supported. However, the reference plot may show a different trend in the soil over the 5 years (e.g., increase in pCu rather than constant pCu), which brings into question why the reference plot changed or improved over time and the treated plot did not under the same climatic conditions. If the reference plot improved in pCu over time, and the pCu of the treated plot remained constant after the initial increase, resulting in the same pCu for both plots at the end of 5 years, the treatment provided no long-term benefit and was not successful. Therefore, to evaluate if the treatments are beneficial, the “difference in soil chemistry” plotted over time between an amendment plot and its adjacent reference plot fitted to a regression line was used to identify whether persistence was beneficial relative to the reference plot. If the initial difference between the reference and amended plot resulting from treatment remains constant over time, and the slope of the regression fit to the difference data are not significantly different from zero, the effect of the remediation was considered persistent and beneficial (a success). If the difference decreases to zero after 5 years, the amendment improvement was not beneficial. In other words, the difference between the plots from the amendments and/or tilling should be maintained (slope of the difference regression not significantly different from zero) if the effect is persistent and beneficial.

Effect of the White Rain. White rain effects were not evaluated with a BACI because no reference plots existed that were not exposed to white rain. To evaluate the effect of the white rain, a blocked ANOVA comparing pre-white rain data (2006) to post-white rain data (May/June 2008) on amendment plots was conducted, where the four plot locations were the blocks. To support the validity of the analysis, the magnitude of the white rain effect on pH, copper, and pCu was compared to the magnitude identified for the STSU in the white rain report (Arcadis 2017a) for ERA plots with pH < 5.5. Plots with such levels of pH exhibited low buffering capacity and responded to the white rain, whereas plots with higher pH did not.

Effect of Organic Matter Alone. The effect of organic matter additions applied at three different rates could only be evaluated qualitatively with considerable uncertainty because of too many confounding factors (different rangeland condition, slope, tilling treatments). These factors cannot be separated in statistical analyses given the small sample size (only three plots received the organic matter). Lime effects evaluated included organic matter because organic matter was always applied with the lime. Large changes in pH, however, were predicted based on the lime, not the organic matter.

Surface versus Subsurface Soils. All analyses discussed above were performed on surface soils of 0 to 6 inches bgs. Surface soil parameters were also compared to those of the subsurface to monitor the downward migration of amendments through the soil column and address concerns that the lime addition will infiltrate downward beyond the shallow soil zone with precipitation and would not be effective at increasing pH in the shallow soil in the long term. Additionally, the analysis examined whether copper is moving downward and eventually out of the main root zone. To address these questions, the trends in pH and copper concentrations over time in each plot in the surface and subsurface soil were qualitatively evaluated to determine if copper or acidity have changed over time at depth during surface treatments.

Subsurface soil pH and copper also were plotted against surface soil pH and copper in a regression. The regression should exhibit no relationship between surface and subsurface soils in reference plots if high copper and depressed pH from the smelter have not reached the deeper soil layers and in amended plots if the lime and amendments have not impacted the deeper layers after 5 years.

4.3 Monitoring Vegetation Conditions

Vegetation sampling included: (1) sampling plant tissue to analyze copper concentrations and (2) measuring vegetation community parameters. Baseline vegetation sampling within the four amendment plots and adjacent reference plots was conducted in March 2008, a few months before amendment application (**Appendix B**). Post-amendment sampling of community parameters occurred on five occasions that were wet enough to adequately characterize the vegetation, mostly in the fall: December

2008, October 2009, April 2010, October 2010, and October 2013. Plant tissue was sampled before amendment application in March 2008 (only in amendment plots) and post-application in October 2013 (on both amendment and reference plots). Photographs from the fall and spring sampling of the amendment and adjacent reference plots before and after amendment over the 5-year monitoring period are provided in **Appendix D**.

4.3.1 Baseline Vegetation Sampling

In March 2008, during the non-growing season (representing plant uptake during the previous growing season before the white rain), plant tissue samples were collected throughout the amendment plots. Samples included the entire aboveground plant (shoots, leaves, and seeds) and were not washed before lab analysis. During this same sampling period, two permanent 0.01-acre (11-foot radius) vegetation circular subplots were established in each amendment plot and a single 0.01-acre circular subplot was established in the associated reference plot. Each subplot was identified using a 24-inch black steel marker with pink flagging attached. Global positioning system (GPS) coordinates were recorded for each subplot using a hand-held GPS unit.

A professional botanist identified species present within each 0.01-acre circular subplot. The total number of species present per plot was used to estimate species richness (number of species), and species cover per plot was used to calculate Shannon Evenness and Shannon Diversity. Canopy cover midpoints (**Table 5**) were assigned to each species following Daubenmire (1959). Canopy cover summed over all species in a plot can exceed 100 percent due to overlap; therefore, in addition, total vegetation cover and percent bare ground were estimated, which total to 100 percent. Percent of vegetation that was native or composed of annual species was also assessed for each plot. In the original work plan (Arcadis 2008b), shrub cover was also planned to be sampled in a 0.1-acre circular plot (a larger plot may be more accurate for shrubs than a small plot), and was sampled at baseline and in Year 1 of monitoring. However, this plot was removed from future monitoring and all analyses in this report because there was little difference between shrub cover in the small and large plots.

4.3.2 Post- Amendment Vegetation Sampling

In October 2013, plant tissue samples were collected from throughout the amendment plots, as in 2008, and included the entire aboveground plant (shoots, leaves, and seeds). When honey mesquite (*Prosopsis glandulosa*) was collected, 5 percent of the weight was seeds and the rest was foliage. It was estimated that 15 percent of the weight of the whole aboveground tiller for the grasses collected were seeds and the rest was foliage. Copper concentrations were analyzed on washed and unwashed samples of the same species. **Appendix B-1** contains the standard operating procedure (SOP) for collecting seeds and foliage. A regression was then developed (see **Appendix B-2**) to predict washed from unwashed concentrations or vice versa, given that data collected on plants before 2013 were from unwashed samples. Washed results represent actual plant uptake, but unwashed results were used to compare changes in copper concentrations in tissue over time. Unlike the plant tissue collected in 2008, plants were collected during the growing season in 2013.

In five sampling periods, from December 2008 to October 2013, the sampling of the vegetation community parameters conducted at baseline was repeated after application of amendments/tilling using the same methods described for baseline. In addition, to evaluate success of vegetation establishment after disturbance using reclamation criteria, CCP sampling methods were performed in October 2010 and October 2013 as specified in the revised work plan schedule (see Appendix A of the Year 2 report for revised schedule). CCP sampling methods must be used to compare to the CCP reclamation criteria.

The CCP methods outlined in Daniel B. Stephens & Associates, Inc. (1999) and Chino (2007) specify sampling in the fall. These methods were adapted to fit the small size of the amendment plots. Specifically, quadrats were placed on transects to collect percent cover and shrub density data. Each 0.25-acre amendment plot was divided into 25 20-foot by 20-foot blocks, with five blocks randomly sampled in each amendment plot each year. Two 20-foot transects were located in each randomly selected block in a dogleg pattern. The first leg of a transect originated in the southeastern corner of each block. A 3.3-foot by 3.3-foot quadrat (i.e., 1 meter square) was placed at 5 and 15 feet along each transect. CCP sampling was not conducted on the reference plots.

For the CCP sampling, conducted solely for comparing results to CCP success criteria, total canopy cover, species canopy cover (aboveground), basal cover (on ground only), surface litter, surface rock fragments, and bare soil were visually estimated in each quadrat by a professional botanist. Canopy cover estimates included the foliage and foliage interspaces of all individual plants rooted in the quadrat. As with the circular plot sampling method described above, percent cover was estimated on a species basis and totaled greater than 100 percent when summed across all species in individual quadrats because foliage overlaps. In contrast, the sum of the total canopy cover, surface litter, rock fragments, and bare soil does not exceed 100 percent. Species occurrence was determined by traversing the selected block and listing all the species encountered. In addition, the number of individual shrub plants in each quadrat was counted by species to estimate shrub density per square meter quadrat. Finally, the point-centered quarter (PCQ) method (using distance to nearest shrub measurements, see Bonham 1989) was used at each quadrat location to estimate woody plant density. The terminal nodes of the dogleg transects were used as the fixed points for the PCQ distance measurements.

4.3.3 Vegetation Analytical Methods

Plant tissue samples collected in 2008 (unwashed) and 2013 (washed and unwashed) were subjected to total copper analysis similar to the soil samples. The samples were subjected to acid digestion using EPA 3050B followed by ICP-AES analysis (EPA 6010B) with a reporting limit of 1 mg/kg.

4.3.4 Vegetation Data Analysis

To compare mean plant tissue concentrations of copper between time periods and between amendment and reference plots, one-tailed two-sample *t*-tests were performed and test assumptions met. Tissue concentrations before and after the white rain were first compared to evaluate the white rain effect. Tissue concentrations in the amendment plot before the white rain and after the white rain plus treatments were compared relative to the white rain effect to evaluate if treatment effects alone decreased copper uptake. As aforementioned, to account for differences between unwashed (2008) and washed (2013) plant tissue, a regression was developed between washed and unwashed tissue concentrations in 2013 (**Appendix B-2**) to develop a correction factor (0.9282) that was applied to unwashed tissue.

To account for differences between plant tissue collected in the spring 2008 (March), when tissue is dormant, versus tissue collected in the fall, when plants are in their growing cycle, a dormancy bias of 35 percent was estimated by comparing a bioaccumulation model developed on an independent dataset to a bioaccumulation model developed using the amendment plot soil and plant tissue data. The independent dataset were the 21 upland ERA 1999 tissue copper concentrations, which were plotted against pCu measured in 1999 to develop a bioaccumulation model. The regression equation of this site-specific model should be applicable to the amendment plots. Therefore, the dormancy bias was estimated by developing a similar bioaccumulation model with the amendment plot data[11], except the 2008 pre-treatment data first were adjusted downward to compensate for the dormancy bias until the bioaccumulation models were similar. A 35 percent decrease in 2008 data plotted with other 2013 amendment plot data produced a regression equation similar to the ERA equation (Cu_{tissue} = 143.2-15.0*pCu for ERA plots versus Cu_{tissue} = 143.2-18.7*pCu for amendment plots). Therefore, the 2008 tissue data were adjusted downward in concentration by 35 percent before conducting any statistical analyses.

Trend analyses were performed on the circular plot vegetation community data to evaluate changes in total percent cover, Shannon-Wiener species diversity, richness, and evenness from each amendment protocol. Additionally, changes in percent of vegetation that was native, annual, grass, or non-woody were evaluated. These variables were plotted on graphs to qualitatively compare their values: (1) before and after treatment, (2) between amendment plots and untreated reference plots, and (3) over time after treatment. A statistical BACI analysis could not be completed on the vegetation community parameters because only one sample was collected from the 0.01-acre circular plots on reference plots. Instead, as was conducted for soil, the trend in the "difference between amendment and reference plots" for each community parameter was statistically evaluated post-amendment over time (with linear or non-linear regressions) and qualitatively compared before and after amendment/tilling and at the end of 5 years to identify any improvements[12].

The vegetation characteristics were compared before and after the white rain in reference plots to evaluate the effect of the white rain, and then compared before the white rain to the community after it was affected by both the white rain and amendments. The effect of the white rain was considered to evaluate the success of the treatments in reaching the desired target of increasing diversity, cover, richness, and grass and non-

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[11] Bioaccumulation models were developed on unwashed data available for ERA plots; therefore, the bioaccumulation model for amendment plots was also based on unwashed tissue concentrations. Tissue concentrations for ERA plots were estimated using the approach described in Section 7.7.

[12] However, the mean value of a community parameter post-treatment was also compared statistically to the single pre-treatment, pre-white rain estimate in a one-sample t-test to assist in final qualitative interpretations as to whether the parameter might have changed relative to the post-treatment variability in the parameter.

woody cover without excessive annual species invasion In addition, a community analysis (Canonical Correspondence Analysis [CCA]; ter Braak and Cajo 1986 and ter Braak and Verdonschot 1995) was performed in the statistical program R (vegan package, Oksanen et al. 2013) on vegetation data to determine the soil and environmental parameters most correlated with differences in vegetative community composition between the amended and adjacent reference plots. Such an analysis assisted in identifying what aspects of the treatments (disturbance, organic carbon, lime changing pH, tilling) were most strongly affecting the plant community.

4.4 Annual Reporting

Monitoring reports were completed annually (Arcadis 2010b, 2011b, 2012, 2013) to satisfy the annual monitoring requirement stipulated in the Work Plan. This Report is the final report and includes documentation of soil and vegetation sampling results after 5 years, the final statistical evaluations of the amendment effectiveness, and examines whether success criteria defined in the work plan were met (Arcadis 2008). This report also assesses the usefulness of the three remedial technologies to be formally evaluated as part of the STSIU FS.

5. Results

Results are discussed in the following subsections based on the specific hypotheses being tested as part of the study. Summary tables and figures are included at the end of the document text, and additional data or analyses are presented in **Appendix C** (soil) and **Appendix B** (vegetation). Photographs from the fall and spring sampling of the amendment and adjacent reference plots pre-amendment over the 5-year post-monitoring period are provided in **Appendix D**. Rangeland condition data are provided in **Appendix A**. Data directly from the laboratories are provided in **Appendix E**[13]. Soil concentrations discussed in this report are for surface soils 0 to 6 inches deep, unless otherwise noted. Subsurface soil data are reported in **Appendix C** and discussed in Section 5.2.7.

Mean concentrations (see **Table 4**), temporal trends (see **Figures 4a** and **Figure 4b**), and mean differences between amendment and reference plots (**Table 6** and **Figure 5**) for key soil parameters associated with these plots are discussed below. The parameters include pH, total copper, TOC, soluble copper, pCu, and C:N ratio. Mean values for copper concentration in plant tissue are provided in **Tables 7** and **Table 8** and are illustrated on **Figure 6.** Soil ABA results are presented on **Figures 7a** and **7b.**

Vegetation parameters important to wildlife and livestock are also discussed below including trends over time in proportion of community in early successional annual life forms (annual grasses and forbs), illustrated on **Figure 8**. The temporal trends in mean percent cover and diversity measures (richness, Shannon diversity, and Shannon evenness) are presented on **Figures 9a** and **9b. Figure 10** shows the proportion of vegetation in non-woody and grass vegetation over time. Mean differences between cover and diversity measures among amendment and reference plots are shown on **Figure 11**. **Figure 12** shows the change in the percent in native species over time. **Figures 13a, 13b,** and **13c** show the relationship between soil chemistry and species composition in the plot communities. Details on changes in species composition are discussed in **Appendix B-3**.

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[13] Except the oldest soil laboratory data for July 2008 and May 2008

5.1 White Rain Effect

Hypothesis: Soil pH and pCu will increase, soluble copper will decrease, and plant tissue copper concentrations will decrease on amendment and reference plots as a result of the white rain that occurred in January 2008. The effect will persist.

Soil pH. Surface soil samples were collected in spring 2006 and spring 2008 to represent baseline pH before treatment. The white rain fell between these two periods. As hypothesized, the white rain significantly increased pH on amendment and adjacent reference plots between spring 2006 and spring 2008 (ANOVA, P<0.0001, n = 41, **Appendix C-1**). The mean pH increased significantly (P<0.0001, ANOVA) by 1.5 standard units (s.u.) in the plots planned to be amended (excludes West plot, which had high initial pH, see data in **Table 1**)[14]. The pH increase in the steeper Northeast plot was less than the other two plots (0.5 increase vs. 1.2 for East and 2.9 for North, significant interaction term between location and year of P = 0.016) but still significant (*t*-test, P <0.0001).

As a supporting line of evidence of the white rain effect, a comparison of 1999 and 2010 data on ERA plots that exhibited low pH (<5.5 s.u.) reported in Arcadis 2017a showed a similar magnitude of increase after the white rain, an increase of 1.2 s.u. (from 4.7 to 6.0; *t*-test, P < 0.0001).

Notably, pH in the West amendment plot increased after the white rain (to pH 8.2 in May/June 2008, **Appendix C-1**), despite having a high initial pH of 6.5 in 2006. As is often seen in high pH soils that initially increased from the white rain event (see **Figure 7** in Arcadis 2017a), this high West plot pH has been significantly but slowly decreasing over time (see **Table 4**) in both the West amendment and reference plots (see **Figure 4a**, P = 0.002). By 2013, the two West plots averaged a pH of 7.6 (but was higher at a pH of 8.0 by 2014 in the West reference plot monitored as part of the pH monitoring program; Arcadis 2017a). The pH increase of the poorly buffered soils (more acidic pH)

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[14] The pH and pCu estimates may be reported slightly differently for 2008 in different tables depending on whether field and lab pH data are combined and if plots were moved; see **Tables 1** and **4** and **Appendix C-1**; statistical analyses were performed on the all data. Additionally, an error was found in previous annual reports. East and Northeast plots (formerly East A and East B in 2006, renamed East B and East A in 2008, respectively) soil data were switched in 2008 and 2009, which was corrected in this report.

following the white rain event is consistent with neutralization of active acidity, whereas the slow decrease in pH dropping from 8.3 in the higher pH West plot amendment and reference plots suggests that the excess alkalinity associated with the white rain might be slowly depleting from the surface soil. This is uncertain given the variability in pH and more recent increase to 8.0. Overall, the pH monitoring program from 2010 to 2014, which evaluated the permanence of the increase in pH in poorly buffered soils, found that the initial increase from the white rain had been sustained through 2014 (Arcadis 2017a).

These pH changes, resulting from the white rain event, partially disrupted the Amendment Study by effectively liming both the amendment and reference plots. After the white rain, each of the amendment plots met the target goal of pH 5.5 or greater (see **Table 1**, revised study design). The need for adding lime as part of this pilot study was re-evaluated given that the target was already met. It was decided to add more lime because of the possibility that plots would have fluctuated in and out of the target range over time, as has been seen with the reference plots (see **Table 4**). It was necessary to consider the increase in pH from the white rain when deciding how much lime to apply, and the amount planned was reduced from 6.6 to 1.3 t/ac, making the treatment effect smaller and likely more difficult to detect. However, the effect of the white rain can be evaluated as another line of evidence for effectiveness of liming that does not also include adding organic matter because the white rain essentially deposited lime, neutralizing the active acidity that was present from the smelter (see **Appendix B-21** where these other lines of evidence are considered).

<u>Soil pCu</u>. Total copper concentrations required to calculate pCu were not collected from the amendment or reference plots before the white rain event; therefore, the effect of the white rain on pCu is difficult to calculate for these plots. However, if total copper concentrations just after the white rain in May 2008 are assumed to be comparable to those before the white rain (collected in 2006), they can be used to calculate pCu in 2006. When this method is used with laboratory pH data, the increase in pCu from the white rain is estimated to be from 2.04 to 4.31 in the North amendment plot, from 3.5 to 4.61 in the East amendment plot, and from 3.26 to 3.50 in the Northeast amendment plot. These pCu increases are significant at $P < 0.10$ (two-sample *t*-test, $P = 0.06$), which is the target level for assigning significance due to the low sample size and high variability of these data ($n = 5,6$). The average increase in pCu across all three plots using this method is 1.2 s.u., which would mean that the white rain increased the average pCu of the three plots from about 2.9 to 4.1 s.u.

The data presented in the white rain report (Arcadis 2017a) showed that pCu significantly increased from 4.6 to 6.0 due to the white rain ($P < 0.0001$) in the STSIU by 2010 in locations that exhibited low pH in 1999 (less than the 5.5 threshold). If it can be assumed that the same happened on the three amendment plots, then pCu increased by about 1.4 s.u. on the amendment plots. Surprisingly, this 1.4 s.u. increase was predicted using the method above of substituting 2008 copper data for 2006 copper data to calculate pCu. This consistent result supports the hypothesis of the white rain increasing pCu by at least 1 s.u. in low pH locations.

Soluble Copper. Similar to pCu, soluble copper was not estimated on the amendment or reference plots before the white rain event. The only pre-event data available are the 1999 ERA plot data. Average soluble copper in 1999 on non-collocated ERA sites with pH below the pH 5.5 threshold (ERA 1, 2, 3, 4, 7, 9, 13) was 0.56 mg/L ($n = 8$). This soluble copper concentration did not significantly change after the white rain, though it tended to be lower at 0.17 mg/L on amendment plots in May 2008 after the white rain but before amendment ($n = 6$, one-way ANOVA on log-transformed soluble copper, $P = 0.219$). No West plot data were included in this analysis because they were unavailable in May 2008. The hypothesis that soluble copper would significantly decrease from the white rain was not supported by ERA data, but there is uncertainty as to the applicability of ERA results to the amendment study area (see Section 7.2).

Persistence of pH and pCu. After the white rain, the pH and pCu increase observed in the East and North reference plots was persistent for 5 years. Based on data in the reference plots from 2010 to 2013, pCu (but not necessarily pH) increased to even higher levels over time (**Figures 4a** and **4b**). It is uncertain if the increase is from natural attenuation or is an artifact of variability in the data from sampling period to sampling period. Persistence of the pH increase from the white rain is supported for the reference plots when evaluated over the 5-year period specified in the approved work plan, and it is also supported in the draft white rain report up to 2014 (Arcadis 2017a). For example, over the monitoring period, the pH in the North reference plot increased greatly from about 3 s.u. before the white rain to 5.29 s.u. just after the white rain (based on the adjacent amendment plot pH measurement of 3.7 in 2006, pH in the reference plot was likely somewhere between 3 and 4 in 2006, likely at 3 s.u.[15]). In October 2013, after 5

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[15] Note that the reference plot pH was not measured in 2006, but it is assumed to be lower than that of the amendment plot based on the difference (0.84 s.u.) in pH observed between

years, pH averaged even higher at 5.79. For the prior sampling period in April 2013, the pH was at its highest level at 6.23. Therefore, the results do not show trends toward a return of pH to the pre-white rain value of around 3. Also, the statistical analysis for both the North and East reference plots support that the regression fit through the pH of sampling periods post-white rain is not significantly decreasing (no minus sign next to North or East reference plot legend on **Figure 5**) and therefore is not decreasing over time (but the East reference plot is significantly increasing as indicated by its plus sign). A slight decline over the last year in the North plot does not support a concern for lack of persistence, given that the fluctuations are small relative to the large increase from the white rain (true for both North and East reference plots). Persistence beyond 5 years will be evaluated with additional monitoring during the FS.

The ABA data in this report (**Figures 7a** and **7b**, see **Appendix C-7**) and in the white rain report (Arcadis 2017a) also support persistence of the pH increase from the white rain in the North and East reference plots, which is expected to continue over the long term because they meet the MMD criteria of greater than -5 t $CaCO_3$/kt, which means they have low likelihood of acid generation, and because additional sources of acidity are unlikely after the cessation of the smelter operation and capping of the tailings. Also, pH has been sustained at above 5.5 since 2012 in both plots (**Figure 4a**), indicating that all active acidity likely has been neutralized in the plots based on Thomas (1996).

The steeper Northeast reference plot exhibits highly variable pH and pCu, and they also show no upward or downward overall trend (**Figures 4a** and **4b**). The lack of a significant slope or trend over time indicates that there is no decrease in pH or pCu, which supports persistence of the white rain effect to date. However, the Northeast reference plot pH increased less from the white rain than the North and East reference plots (by only 0.5 s.u.). The fluctuations in the Northeast reference plot are large relative to the small increase from the white rain, whereas the other two plots experienced a very large increase in pH from the white rain with later fluctuations much smaller than the initial increase. It is more difficult to assess persistence in the Northeast plot because a fluctuation can dip into the range of the pre-white rain pH, whereas it would need to decrease a large amount for the other plots to return to the pre-white rain pH. The ABA data show that this plot met the MMD criteria of greater than -5 t $CaCO_3$/kt, but the pH is

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the reference plot and amendment plot when measured extensively in 2008 (**Appendix C-1**). Given that the amendment plot pH was 3.7, the reference plot pH could have been about 3.

below 5.5, which supports uncertainty with regard to the future persistence of the white rain effect on the Northeast plot.

For the pCu target of success, only the North reference plot achieved the pre-FS RAC level of 5 or greater by 2013. As mentioned above, pH did not significantly change. The increase appears to be due to a reduction in copper over time (significant trend in North reference plot in **Figure 4b**) The pCu at the poor rangeland East reference plot was 4.86 in October 2013, and at 3.62 at the Northeast reference plot by that date (**Figure 4b**). The significant upward trend of the pCu of the East reference plot (**Figure 4b**) suggests that it may eventually reach that pre-FS RAC level. However, the trend is highly uncertain because the white rain report (2017) indicates that the pCu of the East reference plot dropped from 5.07 in 2013 to 3.93 in 2014[16]. However, the sampling of this plot for the white rain report covers a larger area (0.25 ha) than sampling for the amendment study (0.09 ha) and may not be fully comparable. Also, soil pCu is variable (because pH and copper are variable), reducing the ability to be certain if trends within 5 years are random fluctuations are actual trends.

Plant Tissue Copper Concentrations. To evaluate white rain effects on plant uptake of copper, mean copper concentrations of plant tissue collected from March 2008 amendment plots (representing pre-amendment and pre-white rain conditions) were compared to tissue sampled in October 2013 on adjacent untreated reference plots representing post-white rain samples (**Tables 7** and **8**). Though the March 2008 tissue samples were collected post-white rain, they represent pre-white rain concentrations because the leaves and seeds collected grew during the previous growing season before the white rain (plants were still dormant in March 2008). The comparison to 2013 results assumes that the white rain effect persisted through 2013.

Dormant season tissue can exhibit higher metal concentrations than growing season tissue (Hunter et al. 1987, Johnson et al. 2006). Metals in the plant cells may be allocated to cell wall material during dormancy (Koelling 1996), and the cytoplasm and soluble content of the cell is reduced (especially if ruptured during freezing), which increases metal concentrations in herbaceous plant tissue during dormancy (Lyons et al. 2012). Therefore, the 2008 concentrations were reduced by 35 percent to account for this dormancy bias before statistically comparing means, as discussed in Section 7.3.4.

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[16] Copper increased from 923 to 1,020 mg/kg and pH decreased from 6.0 to 4.9 between 2013 and 2014 on the East reference plot.

Additionally, concentrations were adjusted to “washed” concentrations using the regression discussed in that Section.

The plant concentrations in the West plots are expected to respond differently because of their high soil pH before the white rain, and the Northeast plot may respond differently than the tilled plots because it was not tilled. Therefore, tissue concentrations were compared in several ways: with all plots but the West plots, with only the tilled plots, and with the West plots only.

Ideally, concentrations of copper in the same species should be statistically compared before and after treatments because copper uptake, translocation to leaves, and copper tolerance mechanisms vary by species (Ross 1994). However, individual species could not be compared because of data limitations. Species available in quantities sufficient to sample on the untreated amendment plots changed between 2008 and 2013 (see **Appendix B-1** for foliage sampling methods). Though data are reported and compared qualitatively by individual species (see **Table 8**), statistical analyses were performed on averages calculated for all species combined (see **Table 7**) to have sufficient sample sizes for such analyses.

Because deep-rooted woody plants may respond differently than herbaceous plants, analyses were also conducted on just herbaceous species. Honey mesquite (known to have very deep roots, Phillips 1963) was the only shrub sampled and was removed from the mean tissue concentrations for this second analysis (**Table 7).** Of the species sampled, mesquite exhibited the highest copper concentrations in 2013 (**Table 8**), and its removal lowered the concentration average. Mesquite is not highly sensitive to copper toxicity and survives even in sites with very low pCu (such as ERA 1, Newfields 2005). The reduction in herbaceous species may be of most interest.

Post-white rain, plants on amendment study reference plots (excluding the West plot) in fall 2013 exhibited substantially lower plant tissue copper concentrations (washed) than pre-white rain estimates whether or not mesquite was included or West or Northeast plots were included ($P<0.03$, **Table 7**). White rain reduced concentrations by 53 to 72 percent, depending on the plots and species included. The average concentration of all species sampled in the untreated plots (excluding the West plots) decreased from an average of 83 mg/kg before the white rain in March 2008 to an average of 32 mg/kg in October 2013 after the white rain (**Table 7**), only 12 mg/kg higher than the upper limit of the nutritional requirement range for agricultural crops of 8 to 20 mg/kg for copper (Schulte and Kelling 1991). Similarly, the plant tissue from the two excluded West control plots decreased considerably from 69 mg/kg in pre-white rain conditions to 25 mg/kg copper in 2013 after the white rain. When only herbaceous plants were included, the post-white rain concentrations were even lower (excluding the West plots) at 23 mg/kg when including the Northeast plot and at 20 mg/kg excluding that location (i.e., only including the two tilled plot locations: North and East).[17]

Table 8 shows the tissue concentrations by individual species when they were collected unwashed in 2008, when they were adjusted to washed samples in 2008, and when they were collected twice (as washed and unwashed) in 2013 (n = 1 composite collected across the plot per species per sampling event). Separated by species, the results are similar to the comparison of averages in that species with high copper concentrations exhibited decreased copper levels after the white rain. Specifically, copper concentrations in sideoats grama (*Bouteloua curtipendula*) tissue (washed) decreased on untreated plots in the amendment study after the white rain affected the plants. The decrease before adjusting for the dormancy bias was by 87 percent at the Northeast plot, 37 percent at the West plot, and there was no decrease at the North plot (compare pre-amendment washed data to October 2013 reference washed data in **Table 8**).

Results are not presented for the East plot because sideoats grama was not present on the East plot before the white rain, and no other species comparisons to evaluate the white rain effect were possible on that plot. The North plot exhibited no decrease in sideoats grama because the concentration was already low in this species before the white rain (only 10.2 mg/kg). In contrast, species with high copper concentrations before the white rain (vine mesquite [*Panicum obtusum*]), exhibited copper levels that decreased by 81 percent at the North plot.

Applying the dormancy bias adjustment shrinks the magnitude of the reduction down to 79 and 3 percent for sideoats grama in the Northeast and West plots, respectively. When adjusted, the vine mesquite concentration in the North plot decreased by 71 percent. Therefore, for plants and locations with high copper bioaccumulation, the white rain effectively reduced uptake and appeared to meet the assumption of producing a persistent effect through 2013.

Figure 6 illustrates the average reduction in tissue copper concentrations (washed) across sampled species resulting from the white rain for the tilled plots (North and East),

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[17] **Appendices B-16** and **B-17** summarize the original data unwashed and washed, respectively, before and after dormancy bias adjustments in the 2008 data.

limed plot (Northeast plot), and West control plots, first unadjusted for the dormancy bias and then adjusted. To evaluate if the dormancy bias adjustment is reasonable, **Figure 6** also compares the amendment pre-white concentrations to an independent pre-white rain dataset: the 1999 tissue concentrations at depressed pH ERA plots on the STSIU (ERA 1, 2, 3, 4, 7, 9, 10, and 13 at pH < 5.5). This ERA dataset exhibits an average soil pH similar to the three amendment plots (4.8 compared to amendment plot average of 4.6 when excluding West plots) but higher estimated average soil pCu (4.4 vs. 2.9; **Appendix B-15**). Using these pCu estimates, the ERA pCu bioaccumulation model predicts uptake during the pre-white rain period of 100 mg/kg and 77 mg/kg of copper into plant tissue on average for the amendment plots and ERA dataset, respectively, a 23 percent difference. The observed difference is somewhat higher at 35 percent (**Figure 6**). The dormancy adjustment in 2008 of 35 percent is within the “ballpark” of a reasonable estimate, though it could be underestimating the magnitude of the white rain effect.

5.2 Effectiveness of Amendment/Tilling at Improving Soil Quality

The following subsections discuss the effectiveness of the lime and organic amendments and tilling at improving quality of the soil chemistry. Five hypotheses were identified for soil chemistry. Each subsection below summarizes a hypothesis and provides the statistical analysis and data interpretation used to evaluate it. **Table 2** summarizes all hypotheses tested statistically (except that No. 7 had a qualitative comparison of cover and diversity measures) and the results.

5.2.1 Hypothesis No. 1: Amendment using lime with or without tilling will increase pH, and the increase will persist and exceed the target pH of 5.5.

The before-amendment period (May 2008) and after-amendment period (average of all sampling events after, up to, and through 2013) were statistically compared using BACI. First, the effect of lime amendments was evaluated and then the effect of tilling combined with lime amendments was evaluated (organic matter was also included with lime, but pH changes are assumed to be from the lime). Only the surface layer chemistry was analyzed because the subsurface was not affected to much extent, as discussed in **Section 5.2.7**.

Although the lime amendment increased the mean soil pH by 0.12 s.u. beyond the white rain effect (**Table 9a**), the BACI interaction term was not significant at P = 0.19 (**Table 9b**). The change in pH in unlimed reference plots was in the opposite direction (0.10

s.u. decrease; **Figure 14**) but these magnitudes of change are too small to be significant. Liming the plots after the white rain did not significantly change the pH.

The effect of tilling on pH was evaluated in a BACI by comparing all tilled plots to untilled plots (i.e., northeast and reference plots). The interaction term was almost significant for pH (P = 0.07), but not pCu (P = 0.20; **Tables 9a** and **9b**). The pH result indicates that, with 90 percent confidence (see **Section 7.2**), tilling plus lime amendments may have increased soil pH on average from 6.8 to 7.1 mg/kg (0.3 mg/kg increase), which contrasts with the slight drop in pH from 6.2 to 6.1 observed between pre- and post-treatment periods in the untilled plots (**Figure 15**).

The slight increase in pH from the white rain and the tilling plus amendments persisted over the 5-year Amendment Study period when considering only the amendment plot trends (see **Figure 4a**). However, when the analysis is related back to the reference plot trends, the East amendment plot regression results suggest that there may be a lack of benefit from the tilling in the East amendment plot, but not in the North amendment plot, when evaluating soil chemistry (when evaluating effect on vegetation, the North amendment plot does not show benefits either; see Section 5.3.3) . The lack of benefit for the East amendment plot is uncertain because in 2014, the upward pCu trend was no longer obvious, as discussed above.

Figure 5 displays the differences in mean parameters between the amendment and reference plots. The decline in the difference in mean pH between the amendment and reference plots (East and North) is primarily due to an increase in pH over time on the reference plots rather than a decline in pH on the treatment plots (significant increase in both reference plots shown since 2010 on **Figure 4a**). The decline in the difference is only significant on **Figure 5** for the East plots, indicating that the benefit of amendments and tilling is diminishing over time in this plot because the reference plot is increasing in pH without such treatments. Specifically, after 5 years, the East amendment plot exhibited a mean pH of 7.04, while the mean pH of the East reference plot increased to 5.95 in 2013 (see **Table 4**). This difference of 1.09 was about the magnitude of the difference between the two plots before applying the treatments. In other words, by 2013, the pH difference decreased to the same difference level observed before treatments for the East plots (see **Figure 4a**), which suggests no benefit from treatment by 2013.

For the North plots, the decline in the pH difference is not statistically significant, and it is unlikely that the benefit is diminishing (very low confidence of 56 percent that it is diminishing; **Figure 5**). By 2013, the pH difference in this plot was still greater than the difference before treatment by about 0.25 s.u. Although the North amendment plot shows a two sampling period (more than 1 year) decline in pH in 2013, the pH still falls within the range of fluctuations observed in previous years (**Figure 4a**). Also, the pH is very high: above 6.0 (**Figure 4a**). Therefore, tilling lime into the soil may have benefited the soil chemistry in the North amendment plot (but not necessarily the vegetation community; see Section 5.3.3).

The loss of benefit is different than lack of persistence in the pH data. The loss of benefit means that the improvements can occur without the treatments; therefore, applying treatments does not result in a benefit of higher pH beyond that which would occur without applying any treatments (because natural attenuation was able to increase pH instead). The loss of persistence means that the pH is declining over time, which has not been observed on **Figure 4a** for the tilled plots. As discussed in the white rain report, the tilling plus lime effect in these two plots is expected to persist because all active acidity has been neutralized in plots that exhibit a pH above 5.5 (Thomas 1996), the NNP meet MMD criteria, as discussed in the ABA results below, and additional sources of acidity are unlikely with cessation of the smelter operation and capping of the tailings. These two plots exhibit pH well above 5.5, even with the fluctuations.

The ABA results for the amendment plots (sampled only once post-treatment in December 2008 on amendment plots; **Figures 7a** and **7b***,* see **Appendix C-7**) support persistence of the increased pH in the plots where there was an almost significant increase (North and East amendment plots). The North and East amendment plots exhibited a positive NNP; therefore, the surface soils of these plots met the MMD soil and overburden suitability guidelines of an NNP greater than -5 t $CaCO_3$/kt (MMD 1996).

Notably, all of the other plots in the Amendment study also met this criterion. As mentioned above, the most alkaline pH was observed for the West control reference plot (mean pH 8.16), which also exhibited the highest mean NNP (141 t $CaCO_3$/kt) and NPR (308) compared to the other reference and amendment plots (even after the other plots were amended with lime). The West control plots easily meet the NNP criteria because of the abundance of calcium carbonates in the geological formation creating the soils, but the other plots may nonetheless have enough calcium carbonates from the white rain to avoid becoming strongly acid generating. The white rain may be influencing the ABA results for the other reference soils by neutralizing considerable amounts of active acidity. In addition to the NNP criteria, both the reference and amendment plots were designated as non-PAG based on meeting or exceeding an NPR of 2, with the exception of the East reference plot, which was designated as uncertain based on a mean NPR of 1.3. In contrast, a higher mean NPR of 84.8 was associated with the adjacent East amendment plot surface soil, consistent with residual alkalinity from the lime amendment.

The Northeast amendment plot did not appear to benefit from treatments but averaged pH at 5.49 after application of the amendments nonetheless because of the white rain effect. Although its pH was less consistently above 5.5 than at the other plots, it exhibited an NNP above the MMD criteria since December 2008, suggesting its pH may not revert back to lower values. The white rain report (Arcadis 2017a) shows that soils with pH above 5.1 almost always (with one exception) exhibit NNP above the MMD criteria and likely will persist at pH levels observed. The Northeast amendment plot has exhibited pH above 5.1 since fall 2009. The unusual low pH in December 2009 is based on two samples and may be from very localized areas in the plot and not representative of the plot average (when eight samples were taken later in 2012 and 2013, it is much higher on average; **Table 4**). The Northeast amendment plot trend appears to be more representative of trends observed after the white rain in the Northeast reference plot (if the comparison of the two Northeast plots on **Figure 4a** is adjusted for the average pH of the reference plot being lower; **Appendix C-1**), rather than responding to the amendments. The pattern is consistent with finding no effect of treatments on this plot (which was limed) but not tilled and was situated on a slope.

The pyritic/sulfide sulfur content analysis can also provide some insights into the persistence of the pH changes, with low values indicating higher likelihood of persistence. Sulfur content was low based on the mean pyritic/sulfide sulfur of 0.02 percent for the amendment plot surface soils and 0.05 percent for the reference plot surface soils (see **Appendix C-7**). The pyritic/sulfide sulfur content of the reference plot surface soils was skewed slightly higher by the East reference plot, which averaged 0.10 percent. The East reference plot has layers of windblown tailings, as represented by the comparatively elevated pyritic/sulfide sulfur content, whereas the other reference plots were not affected by tailings. The pH trend upward in the East reference plot may be due to the white rain neutralizing the active acidity from sulfuric acid in this plot. However, the pyritic/sulfide sulfur is not consistently decreasing, making the interpretation of the trend uncertain.

In summary, the treatments were only beneficial for increasing pH on relatively flat plots where the lime and organic matter were tilled into the soil at an 8-inch depth. Tilling may distribute lime into these top inches and neutralize acidity in that depth layer more quickly than not tilling. Without tilling, only the top couple of inches may be neutralized after spraying the soil with lime (Peters and Kelling 1998); it may take several years for the lime to migrate deeper into the soil without tilling (Mamo et al. 2009) unless organic acids are abundant enough to move the calcium carbonate downward more rapidly (high organic matter has moved lime down to almost 8 inches; Bot and Benitas 2005).

Organic matter was added and may have facilitated downward migration of lime. However, the results show that the pH in the tilled plots increased more than in the non-tilled plots that received lime and organic matter. The white rain may have already neutralized the first 2 to 3 inches at the surface. Further improvement in pH in the top 6 inches (surface depth analyzed for pH) may require tilling in the lime to at least this depth or letting nature move it downward over a longer period of time than this 5-year study.

An uncertainty is that the increase in pH in the tilled plots may be unrelated to tilling. The Northeast plot was not tilled, but it may not have demonstrated a response to pH possibly because it was the only treated plot on a steep slope. The sprayed lime and organic matter may have washed downslope before infiltrating, reducing its response to the amendments. This location’s reference plot also exhibited the smallest improvement from white rain (0.5 increase in pH), possibly because of its steepness. The increase in pH observed in the more level plots may have occurred on the untilled Northeast plot as well if it had been on relatively level ground.

Tilling is the more likely explanation because all plots exhibited pH of 5.5 or greater on average in the 6-inch depth sample before treatment. Improvements in pH are unlikely when the pH is that high because buffering capacity is typically high (Arcadis 2017a). However, if the lower 4 inches of the surface 6 inches were still relatively acidic, and only the surface 2 inches were very high in pH after the white rain (but average pH over 6 inches was still > 5.5), the tilling may have mixed the lime into deeper layers and facilitated neutralization of the lower inches more quickly. The increase in pH after tilling relative to reference was small (net difference of 0.3 s.u.; **Figure 15**), making it difficult to detect pH changes with certainty given that the power of the tests are most confident for detecting a 0.5 pH increase or more (see **Section 7.2**).

Tilling may accelerate neutralization, but may not be necessary if the white rain is ultimately able to neutralize soils to the target pH of 5 without tilling. The East reference plot had no amendments added, yet it also increased in pH by a small amount similar to that of the East amendment plot by the end of 5 years (from about 4.5 to 6 in reference plot compared to from about 5.5 to 7 in the amendment plot). The white rain’s lime may have been infiltrating downward into the soil profile slowly over time in that plot. The surface inch was tailing material already high in pH in 2006 in this area even before the white rain (~6.5; **Appendix C-3**). Below the surface inch, the soil was very acidic (~4 s.u.). As such, the improvement from neutralizing the acidity would take more time for the East reference plot because it must migrate deeper to reach the acidic layer[18]. This delayed effect is less apparent in the North reference plot, probably because this plot did not have tailing material on the surface and averaged pH above 5.5 consistently after the white rain, whereas the East reference plot was below pH of 5 until 2012. Most of the STSIU does not have an inch of tailing on top of the soil and may have responded more quickly to the white rain, as observed in the white rain report (Arcadis 2017a). However, for the Northeast reference plot, which did not have tailing on the surface, pH fluctuated around 5 and did not improve over time, indicating that it probably did not have improvement with lime infiltration to deeper layers after the white rain. Possibly, the lack of improvement was because of runoff of lime from the steeper plot and its soil had more buffering capacity (because of more topsoil) than the eroded East reference plot.

In summary, all treated plots successfully met the target criteria of pH 5.5 or greater in fall 2013 (see **Table 4**) due to the white rain, the treatments, or both. The hypothesis that an initial increase in pH would be observed as a result of simply applying a lime amendment (plus organic matter) after the white rain was not supported by the study findings; however, the addition of tilling likely does cause an increase in pH that persists over time. It is unknown if the treatments are beneficial in the long term given that the white rain contribution of alkalinity may still be migrating deeper into the soil. Considerable uncertainty is associated with these conclusions, which is discussed in Section 7.2.2.

5.2.2 Hypothesis No. 2: Tilling (to 8-inch depth) will decrease total copper in surface soil, and the decrease will persist, whereas lime and organic matter (removing effect of tilling) will not affect total copper because copper will remain in the surface soils.

The hypothesis that tilling to 8 inches would significantly decrease average total copper in the top 6 inches was not supported by the study findings. The BACI results carry some uncertainty because copper concentrations pre-amendment are estimated from less collocated reference areas (see **Appendix C-2**), not from the exact adjacent reference plot in the study. Tilling decreased total copper concentrations by a mean of 557 mg/kg (least square mean difference in the two tilled plots compared to untilled plots, **Table 9a** and **Figure 15**). The interaction term was not significant (P = 0.91) in the BACI, however,

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[18] This pH increase in East reference plot over time is uncertain because low pH was identified again in this area in 2014, but the 2014 plot monitored for the pH monitoring program (see Arcadis 2017a) is much larger and may not be representative.

because the mean copper concentration of untilled plots (all untilled plots were used as reference) also decreased by a similar amount (by 604 mg/kg; see **Tables 9a and 9b, Figure 15,** and **Figure 4a**). Even if sample size were larger with greater power to detect differences (power is low, see Section 7.2), the mean differences are too similar between reference and amendment plots to support that treatments could have affected copper concentration (also see analysis without less collocated plots in Section 7.3.3). If the plots had been tilled to deeper than 8 inches, the reduction may have been larger and significant.

The hypothesis that lime and organic matter would not change total copper was supported, as shown by a non-significant interaction term in the BACI (P = 0.67, 500 mg/kg decrease in amendment plots, 659 mg/kg decrease in reference plots, see **Table 9b** and **Figure 4a**), indicating that copper concentrations did not decrease more than in the adjacent unamended reference or control plots (**Figure 14**). Notably, copper concentrations significantly decreased over time in both the North amendment and North reference plots, whereas one of the West amendment plots exhibited a significant increase in copper concentrations (see **Figure 4a**). It is uncertain if these are real trends or random variability, given the high variability observed in copper concentrations (see Section 7.2).

5.2.3 Hypothesis No. 3: Amendment of lime/organic matter and/or tilling will increase pCu, and this increase will persist.

The hypothesis that an initial increase in pCu would occur from addition of lime/organic matter was not supported. Although tilling plus addition of lime and organic matter (regardless of the organic matter rate applied) increased mean pCu by an additional 1.2 s.u. beyond the white rain effect, the untilled plots also exhibited an increase between the pre- and post-treatment periods of 0.41. (**Table 9a, Figure 7b**). As a result, the increase of 1.2 was not significant (demonstrated by insignificant interaction term at P = 0.2; see **Table 9b.**) Also, lime/organic matter did not significantly increase pCu (interaction term of P = 0.41, see **Table 9b**).

With larger sample sizes, the increases might be significant but are difficult to detect because of the low power of the statistical test for the tilling analysis (see Section 7.2) and because the expected increase in pCu from just increasing pH by liming is small for the lime amendment analysis. Liming rates applied in this study were deliberately kept low because white rain already limed the plots, and less was needed.

If samples sizes were larger, providing more statistical power, it is possible that the difference in the increase between tilled and untilled plots (1.2 – 0.41 = 0.79) could become significant. The increase in pCu, whether significant or not, persisted over the 5-year monitoring period when evaluating only the amendment plot data. When compared to reference plots, the increase relative to untreated plots in the East and North amendment plots may be diminishing over time because the East and North reference plots are increasing in pCu over time, whereas pCu has not increased in the amendment plots during this post-amendment period (see **Figure 4b**). The diminishing trend, based on the difference between reference and amendment plots since 2010, is close to being significant, but not quite statistically significant for the North plot (too highly variable; P = 0.1595), though it is significant for the East plot (see **Figure 5,** which illustrates the difference in pCu between the treatment and reference plots).

The decline in the difference in mean pCu between the amendment and reference plots (**Figure 5**) is due in large part to the gradual increase in pCu in the reference plots over time (see **Figure 4b**). This trend applies mostly to the East plots, however, where the trend is statistically significant. The difference between the plots before treatment is about the same 5 years after the treatment in the East plot (but this conclusion depends on the less collocated data, see Section 7.2). The North and Northeast plots exhibit a slightly larger difference after 5 years, indicating that these plots possibly received some benefit, but the fact that the pCu is almost the same between the two plots in 2013 indicates that the size of the benefit may be negligible. The results could indicate that liming, tilling, and organic matter application is not very effective or needed because the white rain and any natural attenuation would have had the same effect on soil pCu five years after the white rain without treatment, as demonstrated by the untreated reference plots.

These analyses were conducted on calculated pCu. Measured pCu could not be used to evaluate effectiveness of treatments because it was only sampled in October 2013 on amendment and reference plots; no measured pCu data on the plots are available for the 10 other sampling periods or from before treatments or the white rain. Calculated pCu was deemed an adequate surrogate because it was verified to be significantly and highly correlated to measured pCu ($r^2 = 0.75$, $P < 0.0001$; see **Appendix C-8, C-9, C-10**), though it may be biased slightly low. In 2013, average calculated pCu consistently underestimated average measured pCu in the amendment locations around the historical smelter (by 0.93 s.u.), though sites around the smelter where pCu was measured for the phytotoxicity study exhibited less of an underestimate (using data from

Arcadis 2017b)[19]. The underestimation may be a result of calibration procedures used by the laboratory, which demonstrated non-linearity when pCu was greater than 9. The non-linearity outside of the pCu 4 through 9 range was ignored, and a regression fit was applied through the entire range of data from pCu of 4 to 15, which inflates the measured pCu slightly when pCu is greater than 5 (see **Appendix C-6**). Sample variability also likely played a role in the differences in calculated versus measured pCu around the smelter site.

The West control plots met the pre-FS RAC criteria before this pilot study began because, as mentioned previously, the area west of the smelter influenced by the Gila Conglomerate Formation and limestone outcrops naturally exhibits high pH and high pCu. As discussed in **Section 5.1**, of the reference plots, the untreated North reference plot recently reached the pCu pre-FS RAC of ≥ 5 (due to decrease in copper); pCu is also increasing in the East reference plot toward that threshold (due to increase in pH; October 2013 pCu was 4.86 compared to 3.22 in April 2010, see **Figure 4b**). These increases indicate that natural attenuation from and after the white rain could be occurring. Unfortunately, the high copper variability affects calculated pCu and makes this possibility highly uncertain, as seen by the decrease in pCu in the East reference plot to 3.93 in 2014 reported in the white rain report (Arcadis 2017a) after the monitoring for this amendment study was completed (but a larger area than the plot was sampled in 2014).

Of the three limed plots, only the two tilled plots met the pre-FS RAC for pCu of ≥ 5.0, which might support that the combination of liming, organic matter application, and tilling is effective for reaching the pre-FS RAC. However, the interaction term was not

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[19] Comparison of calculated and measured pCu (measured pCu is in parenthesis) in surface soil in fall 2013 (also see table by depth stratum in **Appendix C-8**):

E Amend	E Ref	N Amend	N Ref	NE Amend	NE Ref	W Amend	W ref
6.14(7.13)	4.86(4.72)	5.43(5.99)	5.17(5.71)	3.72(4.50)	3.62 (3.62),	5.96 (8.95)	6.53 (8.26)

In 2006, before white rain/amendment, calculated pCu estimates were (in same plot order):

4.41 2.13 3.26 5.07

significant for pCu for any combination of liming, tilling, and organic matter additions tested (P > 0.2). This suggests that the treatment effect in the tilled plots was too small to detect with the power of the tests; the treatment did not improve the pCu enough beyond the changes and variability in pCu already occurring in the untreated plots.

The untilled Northeast plot also demonstrates little response in pCu to liming or organic matter additions (organic matter loading was highest in this plot), possibly because of the steep slope causing the lime and organic matter to run off rather than infiltrate into the soil. The number of different organic matter rates applied was too limited (n = 3) to develop a quantitative correlation among rates and pCu change, particularly because the plot with the highest rate was the steep-sloped plot that may have had organic matter run off the plot (organic matter was observed downslope). Nevertheless, high organic matter loadings were selected to offset the effect of organic matter runoff, and yet no increase in pCu was observed on this plot. This suggests that organic matter may not be helpful for improving pCu.

Overall, the results do not support that organic matter, lime, or tilling are significantly changing pCu for any treated plot beyond the effect of the white rain. Power for detecting a significant interaction term for pCu with a 1 pCu unit change was low at 45 percent, however (see Section 7.2), creating some uncertainty in this result.

5.2.4 Hypothesis No. 4: Amendment of lime, organic matter, and tilling will decrease soluble copper, and the decrease will persist.

This hypothesis of a beneficial effect of soluble copper is not supported for the two amendments applied together (lime and organic matter), nor with tilling added. Rather than decreasing, soluble copper concentrations initially increased in the three plots amended with lime and organic matter, whether tilled or not (see **Figure 4a**). When the data for the sampling event before lime/organic matter application (May 2008) were compared to the first sampling event after application (December 2008), soluble copper increased significantly by 0.81 mg/L (based on least square means; P = 0.02; **Table 10**). The increase was largest in the non-tilled Northeast plot, and smaller in the tilled plots, but appears to fall within the variability observed in the reference plots over time for all three, whether tilled or not (**Figure 4a**). Tilling and lime amendments appeared to have little long-term effect on soluble copper. The copper concentration increase in the North and East amendment plots was not persistent relative to their reference plots, as illustrated by **Figure 5**, which shows the difference between the reference and treated plots significantly reduced to near zero by 2013[20]. This change is a result of the North and East reference plots having higher soluble copper concentrations in 2010 and 2011 than the amended plots (though it is unknown if that was true in early 2008 before amendments were applied). These levels in the North and East reference plots have since been decreasing (significantly for the East reference plot), in contrast to the North and East amendment plots, which are not decreasing in soluble copper. Therefore, the two trends are converging to no difference (see **Figure 4a**). The effect of tilling on soluble copper is evaluated in other ways in the uncertainty section (Section 7.3.2), which also support no effect of treatments in decreasing soluble copper.

Possibly, the initial increase in soluble copper was from the addition of manure in June 2008, which is an abundant source of dissolved organic carbon. The temporary increase in soluble copper could be due to copper complexation with dissolved organic carbon. Free cupric ion activity did not concurrently increase (as seen on North and East amendment plots, which increased in both pCu and soluble copper right after the amendment, see **Figures 4a** and **Figure 4b**), likely due to free cupric ion complexation with the lime. The Northeast amendment plot, with the most organic matter applied (72 t/ac), exhibited a strong increase in soluble copper concentrations initially after organic matter application but within the range of variability observed on its reference plot (**Figure 4a**)**.** Surprisingly, TOC was not significantly higher in the Northeast amendment plot than in the adjacent reference plot (P = 0.385; see **Table 11**), even though very large amounts of organic matter were spread on the site. This supports that the soluble copper concentration increase may be a random fluctuation because organic matter may not have mixed in well with the soil without tilling and was lost in runoff.

Though soluble copper concentrations and pCu were inversely correlated in surface soil samples (r = -0.80; P <0.0001; n = 141), pCu is more directly related to the free cupric ion taken up by plants than soluble copper (which can occur in forms that are not taken up). Therefore, soluble copper was not used to establish target success criteria. Rather, because the mean value of pCu changed in the hypothesized direction

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[20] The Northeast plot also trended toward a reduction in the difference between amendment and reference plots, but its high variability made the trend insignificant.

after amendments and tilling (though not significantly), pCu was the metric selected for target success criteria.

5.2.5 Hypothesis No. 5: Amendment of organic matter will increase TOC percentage and decrease C:N ratio; these changes will persist, meeting the target of 1% TOC and C:N of less than 20:1, preferably between 8:1 and 15:1.

The hypothesis for initial effects was supported for TOC after 1.5 years after amendment application. TOC significantly increased in plots amended with organic matter (P = 0.020) by an average of 0.38 percent (see **Table 10**) after almost 2 years (increase was slightly less after 6 months). The increase persisted or, in the case of the Northeast amendment plot (which had the highest amounts of organic matter applied), continued to increase (see **Figure 4b**). Average TOC also was significantly higher in the North and East amendment plots than in adjacent reference plots from 2010 to 2013 (see **Table 11**), and the difference persisted (see **Figure 5**). Post-amendment, the Northeast plot tended to exhibit higher TOC on average than the adjacent reference plot since 2010, particularly in 2013; although, as mentioned in the previous subsection, not significantly higher due to high variability of TOC on both plots (see **Table 11** and **Figure 4b**).

As mentioned previously, the steeper slope caused the organic matter to wash down the slope when it was spread during spraying of the lime, creating uneven application of organic matter compared to that for the more level North and East plots. All plots met the criterion of at least 1 percent TOC in fall 2013, indicating that the amendments and then plant establishment or recovery, with the new plants adding new organic matter over time, was effective at increasing carbon levels. The added TOC not only increases nutrient- and water-holding capacity of soils, but may further bind copper, possibly contributing to the increase in pCu observed with the decrease in pH. However, soil data are too limited to positively identify this condition, and other results discussed in this report suggest that the organic matter contribution to reducing bioavailability of copper to plants was limited.

The North amendment plot gain in TOC was persistent (change over time was not significant). However, if the last TOC estimate in October 2013 (see **Table 4**) indicates that the gain in TOC is possibly starting to be lost (or may be a result of variability in sampling). Nonetheless, because its TOC was already relatively high before treatment in May 2008 (1.25 percent), organic matter may not have been needed to increase TOC on the North plot, based on these TOC estimates in April and October 2013 . The value of adding organic matter is uncertain, and may be best for plots that are not on a slope and that exhibit <1 percent TOC.

Similar to TOC, the C:N ratio significantly decreased 1.5 after amendment application (P = 0.04, see **Table 10**). The C:N ratio was not related to amount of organic matter applied because it was significantly lower (by 3 or 4:1) in the amendment plots that received the highest and lowest organic matter applications (Northeast and North plots, respectively) than their adjacent reference plots (see **Table 11**). The increase in TOC was greatest in the East plot, which fell in the middle of the range of t/ac added (47 t/ac). However, the difference from the reference was small and not quite significant for this East amendment plot (P = 0.085; see **Table 11**).

The C:N ratio started out high before application, averaging 18:1 on the three plots (based on least square means; see **Table 10**). It dropped to 13:1 at 1.5 years after application. The organic matter added to the plots had higher C:N ratios (25:1, see **Appendix C-3**) than the upper threshold target of 15:1; therefore, the ability of the manure to lower C:N ratio may seem counterintuitive. However, the carbon and nitrogen in manure is highly labile and easily used by microorganisms, which respire off the carbon and retain the nitrogen, actually lowering the C:N ratio in the soil. All amendment plots met the optimum criteria of C:N between 8:1 and 15:1 in fall 2013 except the East amendment plot, which fell below the lower threshold to a 7:1 ratio (see **Table 4**). If the ratio drops too low, excess nitrogen is not used by bacteria or plants, but is volatized and lost from the system. The organic matter application rate of 47 t/ac for the East plot probably was too high.

Since amendment application, the C:N ratio has been further decreasing over time (see **Figure 4b**), though not more than reference plots. In fact, differences between the two were closer to zero by 2013 (see **Figures 4b** and **5**). All of the untreated reference plots exhibited C:N ratios within the target range by 2013 (see **Table 4**), though they were higher on average than those of the amendment plots. The C:N ratio in reference plots is steadily improving, possibly due to better plant community development after the white rain. These results suggest that organic matter application may not be necessary to improve soil nutrients for plant growth, although it can boost organic carbon and organic matter, which build better soil structure for retaining nutrients and binding copper. The addition of organic matter not only increased TOC, as shown by the correlation of $r^2 = 0.714$ between amount added and average increase in TOC from May 2008 to 2013 (n = 4), but also increased plant available nitrogen (ammonium and nitrate ions) and total nitrogen over time (see **Appendix C-11, C-12**). The organic matter added appeared to contribute to and facilitate the increase in the supply of nutrients (see **Appendix C-11, C-12**), except in October 2013, when the surface soil nitrates dropped to very low levels again in the North and East amendment plots.

5.2.6 Soil Data Variability

Spatial heterogeneity in soil parameters can be high, as seen by comparing results from sampling the same reference location at the same time using two different sampling methods (**Table 12a**). Surface soil pH and total copper were also being sampled for the Amendment Study reference plots using pH monitoring program protocols since 2010. Specifically, random sampling was used for the Amendment Study to capture the average condition in the each plot. The pH monitoring program used composite sampling in a plot that extended beyond the reference plot (2.6 times larger area sampled) but sampled in similar locations (four corners and center of plot) each year, shifted in a random direction by 5 meters each year (e.g., Arcadis 2014). Using the two different sampling methods on the reference plots at the same time from 2010 to 2013, differences in pH, total copper, and pCu can vary up to 37, 86, and 46 percent, respectively (see **Table 12a**).

Repeatability of results based on comparisons to field duplicates indicates that copper and pH met the Quality Assurance Project Plan (QAPP) standard (reference) of having the relative percent difference between the original and parent duplicate of 50 percent or lower for most of the samples. The soil pH and pCu always met these criteria, but copper did not for 13 percent of the fall samples in 2012 and 2013 (**Table 12b**). If the white rain had not happened, the quality of the data, despite its high variability for copper, may have produced enough power to detect large differences expected from the treatments. In fact, large differences in pH and pCu from the white rain were statistically detected, indicating that the data were adequate to detect meaningful changes. However, small changes expected after the white rain cannot be detected with much confidence given the variability in the data.

5.2.7 Subsurface Soil Trends

The purpose of the subsurface sampling, as stated in the Work Plan, was to monitor the downward migration of amendments through the soil column to address concerns that the lime addition will infiltrate downward with precipitation. If lime is leached from the surface soils, it may not be effective at increasing pH in the shallow soil in the long term. The persistence results in Section 5.2.1 of this report and in the white rain report (Arcadis 2017a) support that an increase in pH in the shallow soil from the white rain and liming has persisted for at least 5 years. The effect of lime added to the surface soil in the tilled plots on pH does not appear to be lost with precipitation in a 5-year period. The persistence beyond 5 years is uncertain, though the ABA results and high pH in all the plots (>5.5) show promise of continued persistence, as discussed earlier.

Though short-term persistence in the surface soil pH has been supported, the subsurface pH data can further reveal if copper or acidity have changed over time at depth in the lime-treated plots due to the migration of lime (or hydroxide ions) or cupric ions after treatment. **Appendix C-13** demonstrates that the positive relationship between surface and subsurface pH is not very different between treated and untreated plots, except that the untreated plots have more variability in the relationship, making the relationship not quite significant. The positive but shallow slope of the relationship suggests that some acidity from the smelter may have migrated deep enough to affect the lower soil layer during the century of smelter operation, but to a limited extent. The surface pH is still significantly lower than in the subsurface soils (6.3 vs. 7.2, P <0.0001), indicating that the surface soil (0- to 6-inch depth) is the main location of pH impacts from the smelter. It is also the layer that changed from treatments because the difference between layers is reduced in the North and East tilled plots post-treatment compared to the pre-treatment plots and post-treatment untilled plots due to an increase in pH in the treated surface soil (**Appendix C-14)**. The East plots exhibit the greatest reduction (surface and subsurface layers became more similar in pH; **Appendix C-14**), but that may be because subsurface samples were not as deep in the East plots as in the North plots (see below and **Appendix C-4).**

The trends support the results in **Section 5.2.1** showing that pH in the shallow soil in these tilled plots increased after the amendments were tilled into the soil. The Northeast plots do not show a reduction between surface and subsurface soils, possibly because of runoff on the steeper slope removing lime that was not tilled into the soil. The West control plots do not show much stratification in pH with depth (both layers exhibit high pH) because of the surface soil's high buffering capacity maintaining a pH similar to the deeper strata. In conclusion, pH in the subsurface did not significantly increase between the pre- and post-treatment periods, indicating very little downward migration of lime into the deeper layers below 12 inches bgs during the 5 post-treatment years of the study.

For copper, concentrations are higher in the surface than in the subsurface soil, as expected. Though variable, there is no obvious trend over time in the treated plots of copper slowly decreasing in the surface and correspondingly increasing in the subsurface layer (**Appendix C-15**). Therefore, copper does not appear to be migrating into deeper layers during the study period. However, the relationship between surface and subsurface copper was steeper in treated than in untreated plots (**Figure C-13**), mostly due to a few Northeast plot subsurface samples that were high in copper. If two subsurface samples exceeding 1,400 mg/kg of copper in the Northeast amendment plot in October 2009 and October 2013 were removed, the slope of the regression is almost identical to that of the untreated plots and indicates no relationship between surface and subsurface soil concentrations.

Soils on steeper slopes experience more erosion and accumulation of colluvium near the slope bottom via gravity[21], which may create more heterogeneity in subsurface chemistry profiles. Though concentrations higher than 1,000 mg/kg were not found in the similarly steep-sloped Northeast reference plot, fewer years of data were obtained in that plot; the more limited sampling may have missed some of the higher copper concentrations in the subsurface. The low copper in the subsurface in untreated plots may indicate that, over the years of smelter operation, copper may not have migrated downward, and is not as mobile as the hydroxide ion. Overall, migration of copper and acidity downward during the relatively short 5-year period after treatment appears to have been limited, with the main effects occurring in the surface layer.

The limited migration of cupric and hydrogen ions over a 5-year period also indicates that the hard pan clay layer did not play a major role in the effect of treatments on the soil chemistry. The clay hard pan was most often below 12 inches (**Appendix C-4** shows that maximum depths of samples, which were controlled by hard pan refusal, were never shallower than 12 inches). As concluded above, this depth probably was not reached by migrating acidity and copper ions during the study. Also, the tilling was only to 8 inches and thus avoided breaking up the hard pan layer. The only minor effect of the hard pan was on pH samples of the subsurface because the maximum depth of the subsurface samples often was controlled by the hard pan.

A "subsurface sample" was not always at the targeted 18- to 24-inch depth because of refusal at the hard pan layer before reaching 12 inches. The maximum depth of subsurface samples had a small positive significant effect on pH of the subsurface samples, where r^2 of linear regression was 0.16 (Northeast, P= 0.03), 0.26 (North, P=0.004), and 0.34 (East, P = 0.0007) for the four amendment plots. The maximum depth of these subsurface samples had no effect on copper (r^2 ranged from 0.02 to 0.11, P>0.05). The hard pan is deeper in the North plots than in the East plots (**Appendix C-**

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[21] Surface layers may have been buried as soil is eroded downslope and now are subsurface layers that still have surface concentrations.

4), and as such, the effect on pH is greatest in the East plots. Therefore, the effect of the variable depth sampling on pH but not copper likely explains why the difference between surface and subsurface samples for pH are smaller for the East plots than for the North plots, and this pattern is not observed for copper. This is considered in the interpretation of the results above.

5.3 Effectiveness of Amendment/Tilling at Improving Vegetation Community

The change in soil chemistry from amendments and tilling was expected to affect the plant community in terms of bioavailable copper, uptake of copper, and plant cover, and eventually increase species diversity measures (quantified as Shannon diversity, Shannon evenness, and richness). The improvement should change species composition, allowing more species beneficial to wildlife and livestock to thrive. However, because the plots were disturbed by complete vegetation removal followed by tilling, or by lime and organic matter temporarily covering plants in the untilled plot (Northeast amendment plot), vegetation re-establishment and/or recovery were evaluated before determining if the plant community changed. Of note, succession in semi-desert systems takes much longer than 5 years (Romme et al. 2003; also see **Appendix B-3**), and overall benefits in terms of species richness and cover from the treatment may not be evident within the 5-year time frame of this pilot study.

To address effects of the remediation technologies on the vegetation, the following sub-sections evaluate

- Section 5.3.1: Success of the vegetation re-establishment and recovery
- Section 5.3.2: Plant uptake of copper
- Section 5.3.3: Effects of the treatments on cover, diversity, and species composition from the reduction in pCu.

5.3.1 Vegetation Establishment

Although it was not the goal of this study to evaluate closure potential with regard to reclamation success guidelines prepared as part of the CCP, several vegetation parameters were evaluated with respect to these guidelines. Chino recognizes that the CCP success criteria were created based on long-term goals with expected vegetation community conditions equivalent to those produced over 12 years of succession. These conditions would correspond to those found after a 12-year bond release period. Data evaluated in this report reflect a more early-successional stage vegetative community present 5 years after remediation. Therefore, the success criteria are intended to be applied to this project only as a benchmark for evaluating progress of the restored plant communities toward the CCP success criteria after 5 years in relation to changes in copper uptake by plants. In addition, vegetation cover was evaluated over the short term to assess and control the risk for erosion caused by the amendment/tilling procedures.

5.3.1.1 Short-term – Erosion Risk

The criterion for the short-term goal of vegetation re-establishment was defined as native cover that is 70 to 100 percent of the average percent native cover of adjacent reference plots. The exact amount of native cover that resulted was uncertain because one species of bristlegrass that colonized the East amendment plot could not be identified to species with certainty and may have been a non-native annual grass (*Setaria viridis*) or a native, perennial bristlegrass (*Setaria leucopila*). Both are known to invade disturbed areas. For this report, it was assumed to be a native perennial because the perennial is common in mesquite areas in the Chino area. Under that assumption, this criterion was met within 2 years and sustained during the vegetation sampling periods since October 2009 (**Table 13**). Even if the bristlegrass was the non-native species, the criterion was still met within 2 years and sustained. These results indicate that, within a short period of time, the vegetation recovered naturally (without a seed mix) to an extent that limits erosion problems.

5.3.1.2 Longer-term – CCP Protocol

Based on CCP quadrat data (collected in October 2010 and October 2013), CCP criteria were met in 2013 in all amendment plots including the undisturbed control plot (West plot), except for cover by cool-season grasses, shrub density, and number of shrub species (**Table 14**). Cool-season grasses also did not grow on the unimpacted Tailing Pond site used to develop the criteria; therefore, it is unlikely that the cool-season grass criteria could be met without seeding these species. Moreover, it is likely that cool-season grasses will only be a minor to possibly absent component in a later successional stage of these sites because they are not common in the mixed herbaceous grama alliance or mesquite/mixed grama alliance of these communities, as characterized in the Comprehensive Vegetation Survey of Chino Mine (Daniel B. Stephens & Associates 1999) and in the site-wide ERA (Newfields 2005).

Although the shrub cover criterion was met in all plots after 5 years, shrub density and number of shrub species (shrub richness) did not meet the CCP success criteria of 0.5 shrub per square meter (m^2) and two shrub species for the tilled North and East amendment plots (see **Table 14** and **Appendix B-4**). This indicates that the development of multiple strata to provide greater structural diversity for wildlife habitat is still in progress, particularly in the East amendment plot. The North amendment plot is closer to the density success criteria, with 0.3 shrub per m^2, compared to very few shrubs on the East amendment plot (none recorded on transects). For both plots, only one shrub species (honey mesquite) was represented on the CCP transects. Although these CCP criteria have not been met on the CCP transects, additional shrub species were present in both the East and North amendment plots on the circular 0.01-acre plots, indicating that shrub species are colonizing the plots. The East amendment plot had three shrub species in 2013 (saltbush [*Atriplex* sp.], Yerba de pasmo [*Baccharis pteronoides*], and honey mesquite), while the North amendment plot had two shrub species (soaptree yucca [*Yucca elata*] and honey mesquite; see **Table 15**). Unlike the tilled plots, the untilled Northeast amendment plot easily met the shrub density and richness criteria, as expected because shrubs were not destroyed during application of the remedy.

The lower density of shrubs in the North and East amendment plots relative to the untilled Northeast plot is due to clearing and tilling that removed shrubs, which resulted in high cover of early successional annuals on the North and East plots (see **Figure 8**). The North amendment plot had a surprisingly high (20 percent cover), though stunted, amount of mesquite shrub cover after only 6 months; this is likely a result of re-sprouted mesquite root masses that remained due to the ineffectiveness of tilling to 8-inch depth at destroying the deeper mesquite root masses (see **Table 15**). In contrast, tilling was very effective at destroying shrubs on the East plot, which has averaged only approximately 3 percent mesquite since tilling. The East plot soil is shallow and probably did not support as deep-rooted mesquite. Successional patterns in other semi-desert areas without chemical impacts suggest that, as perennial grasses and forbs become established after about 20 years, annuals will be displaced, and a greater cover by perennial forbs and grasses (as well as density of shrubs) will become more prevalent (Romme et al. 2003; **Appendix B-3**). Shrub density and cover are expected to increase over time, and will likely meet the CCP criteria within the time frame set up by the CCP guidelines of about 12 years.

More detailed information pertaining to the vegetation community re-establishment after disturbance and expected successional patterns is provided in **Appendix B-3**. Overall, the results suggest that the amended plots are meeting the criteria of: (1)

colonizing with a diversity of native species with a low proportion of exotic, invasive species (see **Figure 11**), (2) progressing in the development of horizontal and vertical complexity important to wildlife habitat, and (3) increasing by 2013 to high levels of cover (**Figure 9a)** and low amounts of bare soil (**Appendix B-5**). The plots had disturbance and manure added, however, which may have allowed more aggressive annual forbs (and some annual grasses) to increase and dominate the tilled plots by 2013 (see **Figure 8**) and resulted in a loss of overall grass cover on the untilled Northeast amendment plot (see **Figures 13a, 13b,** and **13c**).

None of the invasive species on the list for New Mexico (**Appendix B-18)** were identified in any of the plots of the Amendment Study. If tillage and disturbance occur on a large scale with large barren areas, it is possible that tillage and plot disturbance will initially increase the number of invasive species. Disturbed areas are subject to greater invasiveness than non-disturbed areas. Tilling and other disturbance can increase resource availability (e.g., growing space, light, or nutrients) by removing plant cover or freeing nutrients that would be consumed by other plant species (Davis et al. 2000). Burke and Grime (1996) found that invasiveness was strongly related to the availability of bare ground, which would be greatest immediately following disturbance. Propagules of native species growing nearby will also become established and over time will outcompete weedy early successional species as the plots transition through successional stages. It is unknown what the impact on vegetation composition will be and for how long if tilling is implemented at a large scale. At a small scale, invasive species were not a problem.

Despite the plots not having been seeded, vegetation re-establishment to conditions similar to those before disturbance appears to be on an expected trajectory toward eventual recovery. However, return of life forms in proportions observed before the disturbance is still far from recovery. As discussed in **Appendix B-3**, the establishment patterns observed on the tilled plots of increasing domination by annual forbs over the first 5 years are typical for plowed fields. Additionally, the reduction in grasses observed on the Northeast amendment plot should shift over time with the eventual return of these species. Overall, the dominance of perennial species present before amendments were applied may take a long time to recover on these plots, over many decades (see **Appendix B-3**), but should eventually occur. In fall 2014, after this amendment study was completed, some weedy annuals decreased in abundance, and these conditions were sustained in 2016, looking very similar to those in 2014 (see photolog in **Appendix D** showing carelessweed (*Amaranthus palmeri*) dominance greatly reduced except still abundant in the North tilled plot). As discussed in detail in Section 5 of **Appendix B-3**, vegetation succession has been set back in each of the treated plots, and recovery to a mature, healthy plant community may take at least 50 years.

The question remains whether the increase in pCu from the white rain and remedial technologies (amendments and tilling) reduced copper uptake in plants and improved the vegetation community as habitat for wildlife and livestock. That question is addressed below in Sections 5.3.2 and 5.3.3 with two hypotheses. The additional time needed for the vegetation communities to mature is considered in the analysis.

5.3.2 Hypothesis No. 6: The increase in pCu from lime, organic matter, and tilling will reduce uptake of copper into plant tissue.

Based on the results of the test of hypothesis 3, soil pCu did not significantly increase from the combination of white rain, lime/organic matter, or with tilling added, at least not with high statistical confidence. Given that finding, this hypothesis does not need testing because no increase occurred. However, power to detect statistical differences in pCu was low (Section 7.2), and this result is highly uncertain because the mean pCu was higher in amendment plots after treatment, particularly the tilled plots (**Table 9a**). The tilled plots exhibited higher pCu after treatment but only with 80 percent confidence. If an actual increase did occur, the higher pCu may have resulted in reduced plant uptake of copper. Plant concentrations of copper were inversely correlated to soil pCu but not quite with statistical significance ($r^2 = 0.28$, $P = 0.07$, see **Appendix B-6, B-7**). The hypothesis that the amendments and tilling reduced copper uptake can best be evaluated by comparing the reduction in plant tissue concentrations by the white rain event in January 2008 (discussed earlier under hypothesis 1 in **Section 5.1**) to reduction in concentrations by both the white rain and amendments/tilling (see **Figure 6**, and **Tables 7** and **8**). If the results also show no change in uptake due to treatments, support is strengthened that the treatments provided no additional benefit once the white rain had increased pCu.

It is difficult to separate the early effects of white rain from lime and tilling effects by comparing tissue concentrations before and immediately after amendment application because no copper concentrations representative of post-white rain tissue before amendment application are available. The plants sampled in March 2008 on the amendment plots (none were sampled on reference plots in 2008) were dormant (old leaves), not growing new leaves in the winter. Therefore, the plants represent pre-white rain conditions because the white rain event was in January 2008 after the growing leaves accumulated copper. Deciduous shrubs had not yet put on leaves (which is why mesquite was not sampled in 2008). Therefore, as discussed previously, plant tissue concentrations from March 2008 were considered pre-white rain estimates.

To evaluate the effect of treatments alone, rather than combined with white rain, several steps were required. First, the pre-treatment amendment plots were compared to reference plots in 2013 after the white rain (see Section 5.1) to identify the effect of the white rain on mean tissue concentrations. Second, the pre-treatment amendment plots were compared to post-treatment amendment plots in 2013 to identify the combined effect of treatments plus white rain. Third, the effect of white rain alone was subtracted from the effect of white rain and treatments combined, which is the reduction in tissue concentrations that resulted from application of the treatments alone (**Table 7**).

Another way to evaluate the treatment effect and reach the same result is to subtract the mean tissue concentration of the untreated post-white rain reference plot from the adjacent treated post-white rain amendment plot[22]. Both methods assume that the white rain affected both plots equally, and the difference in tissue concentrations is mainly from amendments and/or tilling, not from inherent differences in the soil or original concentration of soil copper among the adjacent plots.

Figure 6 shows the reduction in tissue concentrations (washed) from the white rain and white rain plus treatments with and without the dormancy bias adjustment. With the dormancy adjustment, the reduction from the treatment alone (after removing the white rain effect) is statistically significant (significance set at $P < 0.10$ due to low sample size), but only for herbaceous vegetation (when mesquite is removed, $P<0.09$, bottom analysis in **Table 7**). Tissue concentrations in the treated plots were reduced by 7 mg/kg in the herbaceous vegetation. If the less sensitive but high copper-accumulating species of mesquite is included, the difference is 12 mg/kg (also see **Figure 6**); however, that difference is no longer statistically significant (**Table 7**). The white rain reduced concentrations by up to 60 mg/kg (**Table 7**) and as such, had a much larger effect. The small effect from the treatments is not unexpected given that

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[22] This second method produces same final result (**Table 7)** because no difference could exist between concentrations in amendment and reference plots pre-treatment/white rain, given there was no reference plot in May 2008 for soil sampling, and the first method substitutes the amendment plot for the reference plot during that period.

the white rain had already neutralized a considerable amount of acidity. Unlike the tilled plots, the Northeast plot (which was only limed, not tilled) did not exhibit a reduction in copper in the plant tissue (0 difference, **Table 7**). The two plots that responded with a reduction in uptake (North and East plots) were on relatively flat ground and tilled. Tilling of lime into the soil on flat ground that limits runoff may improve effectiveness.

After the white rain and treatments, the final tissue concentration average in the North and East plots in 2013 was low at 18 mg/kg (washed)[23], no longer high enough to be of great concern because it falls within the range of nutritional sufficiency (Schulte and Kelling 1991) for copper and below phytotoxicity levels tissue toxicity thresholds (McBride 2001), though higher than background concentrations observed off the mine site near the airport of 8 mg/kg on ERA reference plots in 1999 (see **Figure 6**). When mesquite was removed, the tissue copper concentration averaged even lower at 13 mg/kg (**Table 7**). As mentioned above, the Northeast plot did not improve with addition of lime and organic matter and still exhibited high tissue concentrations in 2013 of 34 mg/kg (**Table 7**). The lack of a response in the Northeast plot is consistent with the results, showing that pH increased the most (and almost significantly) on the tilled and amended relatively flat plots, but not in the untilled Northeast plot.

The estimates of copper reduction from treatments assume that tissue concentrations were the same before treatment in the reference and amendment plots. However, for the three plots, the pCu was estimated to be about 8 percent lower in reference plots than in amendment plots before the amendments were applied (**Table 1**[24]), which, using the bioaccumulation equation for amendment plots in **Appendix B-7**, could account for 6 of the apparent 7 mg/kg “reduction” in tissue concentration observed. This means that most of the reduction did not occur from the tilling and amendments because it can be attributed to inherent differences between the amendment and reference plots. This result is consistent with the conclusion in Section 5.2.3 that, after

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[23] See **Appendix B-16** values for North and East amendment plots in 2013, multiply by 0.9282 to convert to washed and average to obtain 18 mg/kg.

[24] Pre-treatment (but after white rain), amendment plots averaged a pH of 4.14 (North = 4.31, Northeast = 3.50, East = 4.61) vs. 3.81 for reference plots (North = 4.43, Northeast = 3.41, East = 3.59).

the white rain, the amendments and tilling provided little additional benefit in pCu relative to the reference plots after 5 years.

The white rain alone reduced copper uptake into aboveground plant tissue by an average of 36 mg/kg in the North and East amendment plots and by 60 mg/kg on average when the Northeast plot was included (**Table 7**). The 36 mg/kg reduction is commensurate with the average pCu increase by 1.7 s.u. in the two plots (North and East) from the white rain (bioaccumulation model predicts a 32 mg/kg change in tissue copper with pCu change of 1.7).

The lack of significant change in pCu from additional liming with organic matter and/or tilling after the white rain already increased pCu is consistent with the interpretation of the tissue concentrations that the treatments did not reduce copper uptake into the plants, or if a reduction occurred, it was very small (1 mg/kg), and only in herbaceous plants. However, the decrease in copper in plant tissue, whether from the white rain only or from the white rain combined with some minor liming and tilling effects, was nonetheless beneficial in the relatively level plots because the concentrations in these plots fell below the high end of the nutritional sufficiency range for copper.

Uptake of copper varies depending on the plant species, which introduces uncertainty into the conclusions on limited or no effectiveness of the treatments on copper uptake. A reduction in copper in plants could occur in the root tissue and be missed in the shoot tissue for species that are excluders of copper (rather than accumulators, Baker 1981, Tilstone and McNair 1997) and do not translocate much copper from the root to the shoot. In general, a decrease in bioavailable copper (cupric ion) produces lower copper concentrations in shoots, but the relative amount may vary by species (Korzeniowska and Stanislawska-Glubiak 2003, Sheldon and Menzies 2004, Verdejo et al. 2015). Soil pCu may be constant in a soil but produce variable copper uptake responses in individual species. The toxicity of the copper in the tissue also will vary depending on the species tolerance (Tilstone and McNair 1997). For this reason, community response endpoints are the best indicators of the effect of pCu changes on toxicity, better than the tissue concentration endpoint.

Community responses measured in the field also account for variability in uptake as a result of variability in the chemistry of the in situ soil. The Terrestrial Biotic Ligand Model indicates that other ions in the soil (H+, Ca^{2+}, and Mg^{2+}) compete with Cu^{2+} for ligand sites of the root and reduce copper uptake (Thakali et al. 2006). Toxicity is more correlated with the fraction of ligand sites actually occupied by Cu^{2+} than pCu (Verdejo et al. 2015), which is why community variables must be evaluated to identify if there has been a toxic response to changes in pCu or tissue concentrations. The next section evaluates the effect of treatments on community variables.

5.3.3 Hypothesis No. 7: The reduced uptake of copper will increase canopy cover and richness. It will also increase evenness and overall diversity of the plant community by 2013 and change the community composition.

5.3.3.1 Plant Cover and Diversity Measures

As stated in the previous section, reduced uptake of copper into plants from any of the remedial technologies is highly uncertain, with the best estimate being at most a 1 mg/kg reduction in the herbaceous vegetation of the tilled plots. The hypothesis being tested for this section-- that reduced copper uptake from the treatments will increase canopy cover, richness, evenness, and overall diversity---depends on having met the condition that copper uptake into plants was reduced. If treatments were ineffective because the white rain already changed the pCu, and as a result reduced uptake and improved the community composition, then any additional changes observed in the community from the treatments after removing the effect of the white rain would not be due to chemical improvements but rather due to four physical factors produced by the treatments: (1) destroying the vegetation during tilling and re-starting succession; (2) disturbing vegetation in untilled areas by driving over plants and spraying them, setting the plot to an earlier stage of succession; (3) decompacting poor rangeland soils with tilling; or (4) adding organic matter that structures and enriches the soil, favors different species, and may contain weed species newly introduced to the area.

Because it is uncertain if treatments were effective in changing copper bioavailability to plants, community changes in the treated plots may provide insight into their possible effectiveness. Changes observed were identified after removing effects attributable to the white rain and climate. The change in vegetative pre-white rain conditions sampled in March 2008 to post-white conditions sampled in October 2013 on the reference plots represents not only the white rain effect, but also the differences resulting from climatic changes between those two periods. If changes from the treatments in the amendment plots (after subtracting white rain/climatic effects) appear commensurate with expected changes based on the treatment's chemical effectiveness and not the four physical factors listed above, the data may indicate positive chemical effects. Such effects may have been missed in the statistical analyses for soil and copper uptake because of lack of power in tests or lack of adequate reference areas. Examples of expected changes from chemical improvements are an increase in grasses, non-woody vegetation, species diversity, or richness in soils that do not have properties limiting plants physically (e.g., by compaction). Also, grass and other species associated with high pCu (based on an ordination technique discussed below) should become more abundant in treated plots. However, if changes in the vegetation community can be solely ascribed to the four factors based on evidence in the literature, from the ordination, and from other studies and analyses in the STSIU (e.g., the discussion in **Appendix B-21**), then the results would support the conclusion that the remedies applied in this study were not effective at remediating chemical impacts.

To identify treatment effects regardless of whether they are chemical or physical, the white rain and climate effect (hereafter referred to as white rain effect) was first identified by comparing seven vegetation measures (cover, richness, evenness, Shannon diversity, non-woody cover, grass cover, and annual cover) before (March 2008) and after (October 2013) the white rain in the reference plots. The same comparison was made for the amendment plots to assess the effect of the white rain plus treatments. The difference in these two comparisons provides insight into the effect of the treatments (**Tables 16a** and **16b**). The community data comparisons were insufficient for a statistical analysis (sample size of one in reference plot each sampling period and two for amendment plots), so the analysis is a qualitative comparison of estimates. However, if the difference due to the white rain in reference plots or due to the white rain plus treatments in the amendment plot appeared to be small relative to the variability in the trend of the vegetation characteristic over time on **Figures 8, 9a, 9b,** and **10** (tested with a one-sample t-test between pre-amendment value and mean of post-amendment values in **Appendix B-20a** and **20b**), the difference was assumed to be unimportant or uncertain.

The differences in total cover, richness, evenness, and diversity between the amendment and reference plots, rather than absolute values for the amendment plot, were also evaluated graphically on **Figure 11 (**see **Appendix B-3)**. The difference[25], was examined to reduce the effect of seasonal and annual climatic differences when comparing the pre-amendment period (which is in spring) to the post-amendment periods (which are mostly in fall). Both the reference and amendment plots were subject to the same climatic conditions and thus differences between the two types of

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[25] Difference between amendment and reference lines on **Figures 9a** and **9b**.

plots should reflect differences from treatments applied, not from precipitation or weather[26]. This assumption is investigated more thoroughly in Section 7.9.

Effect of White Rain. The white rain may have increased species richness because all the reference and control plots showed increased richness after the white rain (**Table 16a, Figure 9b**). Even considering climatic and seasonal differences, richness was still higher because the spring 2008 results were lower than the spring 2010 results, despite spring 2010 having a slightly drier growing season than the growing season for March 2008 (**Figure 16**). Shannon diversity also increased, but one plot did not exhibit the increase (Northeast reference plot, **Table 16a, Figure 9a**). Evenness increased only in half the plot locations. Percent cover did not change with any certainty in most of the plots except the Northeast reference plot, which exhibited a decrease in cover after the white rain[27] (may not be related to white rain because it exhibited smallest change in soil pH of only 0.5). The proportion in non-woody cover increased in all but the West control plots (**Table 16b**). West plots already had high pCu before the white rain, however, and their response may not be that informative. The change in proportion in grasses after the white rain was uncertain or absent for more than half the plots and showed a minor increase (Northeast plot) or decrease (one West control plot) in the other plots. The change in the proportion in annual species was inconsistent, either uncertain, an increase (North), or a minor decrease (East). White rain effects on vegetation are evaluated using other data sources to confirm these conclusions in **Appendix B-21**.

Effect of Treatments. After subtracting the white rain changes listed above, changes observed from the treatments included an increase in the total vegetative cover in the Northeast and East plots and a decrease in evenness in the North plot (**Table 16a**). The proportion of the total cover in grasses decreased in the Northeast and North amendment plots, but increased in the East amendment plot (**Table 16b**). The proportion in non-woody species also increased in the East plot, with a minor increase in the North plot (mostly due to annuals), and any change in this measure was uncertain in the Northeast plot. Annual species increased in the tilled plots (North and

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[26] Similar to above, where white rain and climatic effects are removed by the difference in the reference plots between October 2013 and March 2008.

[27] The North reference plot exhibited an absolute increase in total cover of 25 percent, but that level of increase falls within range of variability of cover.

East) and changes in annual species were uncertain in the untilled Northeast plot (**Table 16b**). The changes in evenness and richness were too uncertain in all the plots falling within variability of these measures over time (**Table 16a**).

The decrease in grasses in the North and Northeast amendment plots and loss of total cover in the North amendment plot from the treatments are of concern because the objective was to improve grass cover. The decreases likely are because these plots were in fair rangeland condition and the disturbance from tilling or spraying with lime and depositing organic matter on the plants transitioned the plots to a more degraded condition and earlier successional stage (see **Appendix B-3, Section 5**). In contrast, the East amendment plot had been in poor rangeland condition, and decompacting the soil may have been the factor that increased grass cover. The photographs of the soil just after being tilled (see **Appendix D**) demonstrate how rocky and poor the soil was on the East plot compared to the finer, more granular soil in the North plot.

Figure 11 shows whether initial changes from treatments and white rain[28] persist over the next 5 years relative to the reference plot trends (trends are differences between the amendment and reference plots). For example, pre-treatment difference in cover of the East amendment plots is low before treatment and the white rain, but becomes high after and remains high (slope is not significantly different from zero) and therefore is persistent (**Figure 11**). The North and Northeast amendment plots have more cover than the reference plot, which is lost after treatments/white rain and not consistently and significantly regained (insignificant slope). The negative effect is persistent.

Diversity and richness loss is significantly regained in the Northeast plot, so the negative effect for those parameters is not persistent. All other trends on **Figure 11** do not show a significant lack of persistence. Sample sizes are probably too low to detect trends statistically for the other plots with a noticeable non-zero slope in the regression line. The high variability in the parameters over time makes conclusions of persistence in non-significant regressions on **Figure 11** less certain.

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[28] If trends of the amendment plot lines on **Figures 8** to **10** and **12** are evaluated only, the trend represents white rain effects and climatic effects on top of treatment effects because March 2008 represents pre-white rain conditions (though for soil, it is post-treatment conditions). **Tables 16a** and **16b** subtract the white rain and climatic effects (called white rain effects in that table) to show the actual treatment effects, as does **Figure 11**.

Figures 9a and **9b** also show if the final plant community characteristic of the treated plots is much higher than the reference plots by 2013 or if both communities look similar at the end of the study. The results in those figures indicate that Shannon diversity and evenness of the plant community have improved to levels similar to the adjacent amended plots by 2013, indicating that strong departure from the reference plot condition in 2013 is minimal for those community parameters.

Table 16a is the most informative for interpretation of treatment effects alone on cover, richness, diversity, and evenness because it separates white rain and climate from treatment effects, incorporates variability on **Figures 9a** and **9b**, and accounts for inherent differences in the plots before the white rain or treatments because it evaluates differences over time within the same plot. **Figures 9, 10,** and **11** do not separate out the white rain (March 2008 is a pre-white rain community). The trends in plant community changes are discussed in more detail in **Appendix B-3,** and climatic effects on trends are discussed in Section 7.9.

The following section evaluates the remedy effects as to whether they caused more harm than good in some plots or were beneficial or likely to be beneficial in the long term to the plant community. First, changes in community composition relative to changes in soil chemistry and physical properties are evaluated. Species possibly responding to chemical rather than physical changes are identified. Then each plot is evaluated relative to those species to identify if remediation of the pCu might have benefitted the plant community.

5.3.3.2 Overview of Changes in Community Composition

The change in community composition relative to soil chemistry was quantified using an ordination technique. A CCA ordination was conducted on the plant community data for vegetation sampling events that yielded corresponding soil data. A CCA is a multivariate ordination method used to determine the relationships between plant communities and environmental variables (ter Braak and Verdonschot 1995). CCA accounts for variation in the community composition at each site that directly corresponds to the environmental variables included in the analysis. In this case, the environmental variables include the soil chemistry parameters (pH, pCu, copper, soluble copper) and physical parameters strongly affecting the communities. The physical variables included “time since disturbance”, tilling, and TOC. The time since disturbance variable provides information regarding the effect of successional processes on community composition. The disturbance variable was set to zero before amendments and on reference/control plots; it was set to the highest disturbance (5) immediately after amendment application and/or tilling and then decreased (from 5 to 1) for each sampling event thereafter to represent time since disturbance (see **Appendix B-8**) or the recovery trajectory. The tilling variable (tilled, not tilled) accounts for some plots having complete removal of vegetation, thus resetting vegetation succession completely. A summary of the statistics and variance explained in the CCAs is provided in **Appendix B-22**.

Biplots were created that illustrate the relationship between soil chemistry parameters and species with the West control plots included (**Figure 13a**) and without (**Figure 13b**) because the West control plots represent a different vegetation alliance (Newfields 2005). The arrows (direction of gradient) point to the direction of most rapid positive change in each environmental variable (negative change is in opposite direction of arrow). The length of the arrow (strength of gradient) is proportional to the correlation between the ordination and environmental variable.

The purpose of the CCA was to tease out the relationships between the chemical and physical variables and each species making up the community structure. Species that change in response to chemical parameters such as pH, copper, soluble copper, and pCu but do not respond to physical variables or organic matter content (represented by TOC) are of greatest interest. These species should increase in treated plots if soil chemistry and not physical factors are a key driver of the community composition. When vectors of environmental variables are at right angles to one another on the biplot, they are relatively independent, making interpretations easier than if they are more parallel, meaning they covary.

The biplot results provided on **Figure 13a** include all plots, including the West control plots. As might be expected, the sampling events cluster together in the first biplot based on: (1) the geographic locations of each sampling plot (North, East, Northeast, West), except that East and North locations are intermixed, and (2) amendment status (treated or not; **Figure 13a**). The biplot shows that the vectors for pH and pCu are almost parallel, indicating that they covary, whereas the tilling centroids (if connected by an imaginary line) and time since disturbance vector and are relatively independent of these chemical variables at right angles to pH and pCu. Species that occur in high pH or pCu areas are plotted near the end of the pCu and pH arrows of the second biplot (see **Figure 13a**). Species far in the opposite direction of those arrows occur in the low pCu and pH soils (arrows not drawn in opposite direction but would be the same length). The species preferring high pH include many grasses (red labels on bottom graph) on the West control plots, but these grasses also prefer less disturbance because they fall in the angle between low disturbance and high pH vectors (**Figure 13a**), making it difficult to identify if they are responding to disturbance or soil chemistry. The West control plots are driving this result because they are undisturbed and associated with high pH and to a lesser extent high pCu compared to the other three plot locations, as shown in the first biplot on **Figure 13a**.

Because the biplots on **Figure 13a** are so strongly affected by the high pH West plots, the West plots were removed from the biplots on **Figure 13b** to better identify treatment effects. The CCA without West plots produced environmental vectors at right angles to each other, representing time since disturbance and pH/pCu. Species falling along and near the end of either of one of these vectors represent species responding mostly to that vector. The TOC vector fell between these two axes (**Figure 13b**). Two variables difficult to separate on these biplots because they covaried were pH and tilling, which have vectors nearly parallel with the horizontal CCA1 axis on **Figure 13b.** Fortunately, **Figure 13a** can provide information for separating tilling effects from chemical effects, and **Figure 13b** can separate chemical effects from time since disturbance. For example, two species (CHVI = feather fingergrass [*Chloris virgate*], SESP = bristlegrass [*Setaria* sp.] see **Appendix B-9** for plant codes) appear to prefer high pH or pCu on **Figure 13b,** but **Figure 13a** indicates that they are responding to the tilling (colonizing tilled areas), which happened to be correlated to pH on **Figure 13b**. They are not strongly correlated to the chemical parameters on **Figure 13a**. Red threeawn (ARPU) is more consistent in that it grows often in high pH or pCu areas, as shown by both **Figures 13a** and **13b**, and disturbance may be less important to its presence. The literature supports this CCA result, indicating that red threeawn can occur abundantly in either early successional or climax stages (Clements 1916).

The environmental vector on **Figure 13b** that best separates East and North amended plot communities from their untreated reference plots is TOC (higher TOC in plots with organic matter added). The biplot showing that TOC is the main driver affecting the community in the early successional stage for tilled East and North plots is supported in the literature because disturbed soil with organic additions releases nutrients as represented by TOC. The bare ground invites fast-growing pioneering species to invade until later successional species that grow slower gain a foothold and can outcompete them for the nutrients (Davis et al. 2000). The initial pioneer species are weedy annuals, like Russian thistle (*Salsola tragus,* SATR; **Figure 13b**) and golden crownbeard (*Verbesina encelioides*), not perennial grasses. The combination of disturbance from tilling and TOC/nutrients from amendments facilitates dominance by these ruderal, colonizing species, which are often annuals. A decrease in disturbance over time and its soil nitrogen release should eventually result in a community increasingly dominated by more competitive perennial species.

In contrast, time since disturbance, not TOC, best separates the Northeast amended plots from their untreated counterparts. Despite not being tilled, the spraying of lime and spreading of organic matter (with backhoe) on the Northeast amendment plot caused some disturbance and community changes. The disturbance on the Northeast plot mainly degraded the complexity of the species composition initially and set succession back with loss of grasses and succulents (see Section 5 in **Appendix B-3),** while tilling as a disturbance set the successional stage back to the earlier simple Russian thistle dominated community in the first year for the tilled plots. These results indicate that surface disturbance in general, whether tilling or driving over plants, strongly influences community composition.

To identify if chemical changes are shaping the treated community composition, the percent cover of five indicator species discussed above was evaluated. The two grass species (feather fingergrass and bristlegrass) and the forb golden crownbeard associated with tilling and the early pioneering species of Russian thistle associated with TOC and tilling are not responding to chemical factors, and they should increase if disturbance and TOC are the factors most shaping the amended communities. On the other hand, red threeawn should increase if chemical changes in pH or pCu are most strongly affecting the communities.

Russian thistle increased dramatically and dominated the herbaceous vegetation in the fall in the East and North plots immediately after tilling and application of organic matter, which created ideal conditions for this pioneering species capable of rapid invasion; however, it cannot persist long (Biondini et al. 1985). In the East amendment plot, it was quickly replaced by another colonizing forb (golden crownbeard [VEEN]; **Table 15**), and then partly replaced by bristlegrass, a more competitive colonizer that apparently requires more time to respond to the resetting of the community to an earlier successional stage (Roemer and Schultes 2010). Feather fingergrass also is a more competitive colonizer able to invade near the end of the 5 years (**Table 15**). It outcompeted bristlegrass only in the depression within a corner of one of the tilled plots, where the soil is likely more saline (it is a halophyte, USDA Plants database, see **Appendix B-21**). These species likely are responding most to physical changes and access to the nutrients (in manure and decomposing plants), not pH or copper changes (bristlegrass was present in low pCu soils in ERA 3 in 1999; **Appendix B-21**). Red threeawn, which occurs in seral and climax communities, may be responding to the lime increasing pH, because it appears in the East tilled plot in the last year. This may indicate that the plant community in the East plot is beginning to respond to the liming by 2013.

Notably, other grass species (such as the gramas and other threeawns) are most abundant in low pH and pCu areas when West plots are excluded. They are not growing in such soils because of chemical preference (see **Figure 13b**), but because these areas are the least disturbed, represented by the untreated reference areas. These species are late successional species (**Appendix B-3**). Sampling using the CCP protocols in 2013 indicated that sideoats grama had returned by 2013, and may spread over time as the community recovers from the disturbance. It was not observed on the East reference plot in 2013 (**Table 15**) or 2014 (**Appendix B-21**) or in similar rocky habitats (**Appendix B-21**) after the white rain, which indicates that this species may be responding to decompaction of the soil rather than chemical changes. Overall, in the first 5 years, the species establishing on the East amendment plot indicate that tilling and TOC appear to be mostly shaping the community composition more than the pH change.

In the North amendment plot, after Russian thistle died back, it was replaced by silverleaf nightshade [*Solanum elaeagnifolium*; SOEL], the non-native lambsquarters [*Chenopodium album*; CHAL], and carelessweed [AMPA]. Silverleaf nightshade and carelessweed fall along the pH/pCu vector in the positive direction and may be responding to both the tilling disturbance and the increase in pH and pCu (**Figure 13b**). Both species increased on the North reference plot after the white rain (**Table 15, Appendix B-14**), which may support that these species are responding to soil chemistry changes, though it is unclear if the additional lime beyond the white rain contributed to the change. Sideoats grama is sporadically present before (March 2008 tissue sampled in **Table 8**) and after the white rain on the amendment and reference plots (**Table 15, Appendix B-14**; present some years, not others), making it difficult to evaluate if it is responding to pCu improvements from the white rain or amendments. The results suggest that the community may be responding to pCu changes, but the weeds responding to the change are outcompeting the more desirable grasses.

The Northeast plot experienced no change in pH or plant uptake of copper; therefore, changes in the community are likely only due to disturbance from being sprayed or crushed during amendment application. The rapid forb pioneers of bare soil did not establish because the disturbance did not remove all plants. Instead, shrub cover increased. More details on plant community changes progressing with succession are provided in **Appendices B-21** and **B-3**.

Precipitation for the 3 months prior to sampling was added to the CCA on **Figure 13c** and did not change the biplots much or influence conclusions. Precipitation was highly correlated and more significant than TOC (see **Appendix B-22**), which probably indicates that the pioneer species taking advantage of conditions created by higher TOC also are abundant when precipitation is high. For example, the annual forb, carelessweed (*Amaranthus palmeri*; AMPA) was common during the wet year in 2013.

The finding that higher pH (if it occurred) had a weaker positive effect (on the East plot), no effect (on the Northeast plot), or negative effect (more weeds than rangeland grasses on the North plot) compared to the TOC and tilling variables in the mesquite/grama community suggests that the remedial actions are not always creating the intended community changes within a 5-year time frame. Rather, they have increased ruderal, annual species. The most aggressive annual species dominating the plots in 2013 (carelessweed and golden crownbeard are associated with tilling (blue labels on **Figure 13b**). These species can be toxic to livestock if consumed in large quantities, and thus are not improving rangeland condition (see **Appendix B-3** discussion). Golden crownbeard also entangles nesting birds (HNIS 2005), though birds were observed feeding on its seeds, so it has some wildlife value. Carelessweed is relished by livestock but is poisonous when nitrates are higher in the soil, and thus this change from the amendments is also not beneficial (TAES 2011, AgriLife Extension 2014). Nitrates were elevated by the addition of organic matter, especially in the North and East plots (**Appendix C-11**), which puts cattle at risk**.** Carelessweed also has low value to wildlife according to the U.S. Department of Agriculture (USDA) plants database (USDA 2014).

Fortunately, these two species appeared to be on the decline when plots were observed and photographed (see **Appendix D**) after this study was completed in fall 2014. Eight years later in 2016, only the North amendment plot still supported a large amount of carelessweed (see photolog in **Appendix D**). The East amendment plot still had a large amount of golden crownbeard. These species were either a minor component or non-existent in fall 2014 on the haul roads that were “tilled” in 2003 (see **Appendix D**). The reasons for differences are discussed in **Appendix B-21**.

Because of concern about toxic species and loss of grasses, the section below discusses how treatments changed the quality of the habitat for wildlife and livestock.

5.3.3.3 Amendment Plot Changes in Grasses, Annual Species, and Species Composition

When evaluated by each location, not all plots lost grass cover at the end of the 5 years from the disturbance of the treatments. The East amendment plot increased its rangeland grasses over time, whereas the North and Northeast amendment plots reduced their rangeland grasses (see **Figure 10**). Because rangeland grasses are important to livestock, trends in rangeland grasses, as well as changes in species composition favorable or detrimental to wildlife or livestock resulting from each remedial technology, are discussed below in more detail by plot location. First, the effect of the white rain on species present is discussed to separate changes due to white rain versus the treatments. Then the effect of the treatments, whether from physical or chemical changes, is evaluated.

The fact that the plots were treated with combinations of tilling, liming, and organic matter added introduces uncertainty in the analyses as to which technology is increasing each species. **Appendix B-21** attempts to separate effects of the different remedies to assist in FS decisions using information from other studies. That information also is used in the following assessment.

East Plot White Rain Effect. The species that increased or appeared after the white rain on untreated plots may represent species that were adversely affected by low pH and pCu. However, reference plot species composition may be influenced by the adjacent disturbed plot invaders spilling over into reference plots (see **Appendix B-22**). **Appendix B-21** discusses species that increased after the white rain in areas without adjacent recently disturbed plots (ERA 2 and ERA 3). Species that appeared on the East reference plot and these ERA plots after the white rain that were missing before and might not be a spillover from the tilled plot include beardgrass (*Bothriochloa barbinodis*), silverleaf nightshade, and carelessweed (**Table 15, Appendix B-21**). An increase in these species on amendment plots may indicate a positive response to pCu changes.

East Plot Treatment Effect. The shift in community composition in the East amendment plot from amendment/tilling shown by the CCA appears to be from a large increase in both non-woody, annual and grass life forms (**Figures 10** and **11**). In contrast, the East reference plot had comparably few grasses and annuals (see **Figures 8** and **10**). After the multiple treatments (white rain, tilling, and organic/lime amendments), the grasses on the East amendment plot had increased to 39 percent of vegetative cover in 2013 compared to trace amounts on the pre-amendment and reference plot; forbs changed less, increasing to 58 percent compared to 54 percent on the reference plot (see **Figure 10**). Most of this herbaceous increase, however, was from an increase in dominant annuals (golden crownbeard, carelessweed, feather fingergrass, and possibly bristlegrass, if it was an annual) rather than from an increase in perennial grasses (**Figure 8**).

The tilling disturbance and increase in nutrients (associated with higher TOC) on the East amendment plot apparently favored some annual species that dominated the community, particularly golden crownbeard (which turns the plot yellow with its flowers in the fall), whereas it is not noticeable in the adjacent reference plot. Golden crownbeard may have been introduced via seeds present in the organic matter (City of Ontario 2013), especially because it has a synonymous common name of "cowpen daisy," and because manure for this pilot project came from cow pens. Also, golden crownbeard was not common on the ripped haul roads and other disturbed areas that did not have manure applied. However, it has been recorded in areas in the STSIU in 1997 (in rangeland polygon with the North plots; **Appendix A**). After this study was completed, a field inspection of the East amendment plot in 2014 (6 years after treatment) identified the first evidence of a reduction in golden crownbeard, which was being replaced by more bristlegrass growing on the plot (see photo in **Appendix D**).

As illustrated by the CCA, the increase in disturbance from tilling on the East amendment plot did not favor most of the grass species (see **Figure 13b**), except bristlegrass and feather fingergrass. These two species account for the large increase in grasses on the East plot. As discussed in the previous section, the CCA results indicate that these grasses are responding to the tilling disturbance rather than to pCu changes. The CCA shows that late-successional grasses of the desert plains, particularly three grama species and the more subclimax species Arizona threeawn (*Aristida arizonica*; Clements 1916), are reduced by the severe disturbance from tilling. In contrast, the two early seral species of bristlegrass and feather fingergrass (Humphrey et al. 1932, Roemer and Schultes 2010) were able to establish after tilling (when weedy, annual forbs were on the decline). Red threeawn, which can be an early stage or climax species, also established. These grasses of this early seral stage were gaining in cover toward the end of the 5-year period; therefore, the late-successional stage species are likely to require much more than 5 years to recover.

Tilling appears to be the main driver of grass cover and composition changes because Russian thistle invasion after tilling followed by other weedy annuals and early successional grass species is typical of what has been observed in unexposed study areas (Gelt 1993, Biondini et al. 1985, Romme et al. 2003; also see succession section in **Appendix B-3**). Although conclusions are uncertain because of many correlative factors that occur in the field, the results tentatively suggest that equipment and lime/manure disturbance or tilling causes a reduction in grass cover that does not recover in 5 years (see **Appendix B-21**).

The lack of grasses on the East plot before treatment is most likely a relic of past or current overgrazing (or past pCu impacts) that compacted or removed topsoil, which is why it is in poor rangeland condition. The tilling converted the compacted rocky soil to a more granular, favorable medium for growth, which increased total cover and grass cover. After tilling, this amendment plot was greatly improved and classified in fair/good rangeland condition in 2014 as shown by a change in the OAT score from 13 to 39, the latter assigned to it during the field work for the phytotoxicity and community study (STS-PT-2013-17; Arcadis 2017b). Such a large change in rangeland condition probably impacted the community composition more than the small change in pH that occurred with the liming, especially because the white rain already increased pCu without changing the rangeland condition, yet was ineffective at increasing grass or total cover on the East reference plot. Logically, the increase in cover and grasses was from the tilling, and this conclusion is further supported in **Appendix B-21**.

<u>North Plot White Rain Effect.</u> The white rain appeared to increase silverleaf nightshade and carelessweed on the North reference plot (**Table 15**). Vegetation community data are unavailable for other fair rangeland plots on relatively flat ground subject to the white rain to confirm this finding.

<u>North Plot Treatment Effect.</u> Unlike the reference plot, the plant community on the North amendment plot did not improve once accounting for the white rain plus treatments. The North amendment plot was subjected to mostly the same treatment as the East amendment plot (except lower rate of organic matter applied), but it responded differently, probably because it is in fair rangeland condition. The North amendment plot showed an increase in non-woody vegetation after treatment (see **Figure 10**). However, grass percentages, total cover, and diversity measures did not improve (grass cover and evenness actually decreased from treatments) relative to the reference plot, likely because the North plot pre-treatment had more grass cover and species to begin with from being in better rangeland condition (despite its estimated pre-white rain soil pCu of about 2.0). Grass species before the white rain event included the following perennial species: vine mesquite, Arizona threeawn, and to a lesser extent sideoats grama and beardgrass; **Table 15**). Vine mesquite was thriving on the site before treatment (15.5 percent cover) despite tissue copper concentrations in the winter of 105 mg/kg. This species has continued to be supported at similar cover levels post-amendment. Arizona threeawn was present at 10.5 percent cover with 188 mg/kg copper in its tissue before treatment. This species has not returned to the amended plot (and was never in the reference plot) since the disturbance and lime/tilling treatment (see **Table 15**). Similarly, beardgrass has not returned, though it increased in other areas without disturbance that were altered by the white rain (**Appendix B-21**). Unlike the poor rangeland in the East plot, disturbance to fair rangeland sites to enact a chemical remedy may do more harm than good, causing a loss of grasses.

Carelessweed, an annual forb, may be partially responsible for the lowered evenness and loss of grass cover on the North amendment plot, as it characteristically outcompetes other species under the right disturbed conditions. This aggressive species appeared on all plots, but has most heavily invaded the North amendment plot, appearing first in this plot in December 2008 and reaching its highest abundance on all the plots in 2013. This species may be responding to the higher pCu resulting from the white rain event (see **Figure 13b** where it is associated with higher pCu); it was not prevalent on low pCu soils at 1999 ERA locations (Newfields 2005). It became common throughout Chino (even in the seed collection area in Arcadis 2017b) in 2013, but was especially abundant on the tilled North plot. It apparently invaded from nearby areas, taking advantage of the wet conditions of 2013 following 2 years of drought that created intermittent bare patches for invasion. It was present in the STSIU before the white rain, documented as common in the rangeland polygon of the North plots in 1997 (see **Appendix A**).

Carelessweed, though an aggressive annual, does not appear to be as good an initial colonizer of disturbed areas as Russian thistle (*Salsola tragus*) or golden crownbeard, but did well in the last year of the study. In the fall of 2014, after the study was completed, a field inspection identified that carelessweed was greatly reduced on the North amendment plot. However, grasses did not appear to be replacing the carelessweed (see photolog in **Appendix D**). It disappeared from many areas in 2014, yet by 2016, it was still present in moderate amounts in the North amendment plot.

Precipitation and season sampled also probably had little to do with loss of grasses in the North amendment plot based on field observations and the data, though a wet year following drought may have slowed grass recovery. Grasses could not gain much of a foothold initially when Russian thistle dominated. When the thistle died out, other annual weeds, like carelessweed, colonized and limited grass recolonization. The higher precipitation in 2013 following 2 drought years increased weed abundance in 2013, slowing recovery of the grasses, especially late successional grama species.

When precipitation and season were added to the CCA (**Figure 13c**), the following forbs invading after tilling were associated with higher precipitation (species common on the tilled plots): Russian thistle (SATR), golden crownbeard (VEEN), carelessweed (AMPA), bristlegrass, silverleaf nightshade (SOEL), and scarlet globemallow (*Sphaeralcea coccinea*; SPCO; **Figure 13c**). These forbs appear to have outcompeted the perennial or late-successional grass species (e.g., gramas [BOCU, BOGR], Arizona threeawn [ARAR]) that were originally present on the North plot; the grass species may be most competitive with weedy annuals during drier years.

The lack of improvement in grasses on the North amendment plot from treatments when compared to the East amendment plot also may be related to less effective destruction of mesquite. Mesquite re-sprouted quickly on the North amendment plot but not the East plot, covering 20 percent of the North plot within 6 months. This suggests that mesquite root masses (which sprout) survived the tilling on the North plot. Soils are deeper on the North plot than the East plot, which may allow deeper mesquite root masses to survive.

Nevertheless, the most likely reason the vegetation quality in the North amendment plot did not improve from the combined effects of the white rain and amendments, despite its estimated low pCu of about 2.0 in 2006, is because it already had fair rangeland condition with 29 percent of the vegetation cover in grasses and 49 percent of the cover in herbaceous plants (see **Figure 10**) before amendment application and tilling. This plot had less room for vegetation improvement from remediation than the East amendment plot.

Northeast Plot White Rain Effect. Though the white rain lime may have decreased total cover, it appeared to increase silverleaf nightshade, vine mesquite, tobosa, and carelessweed on the Northeast reference plot (**Table 15**). Vegetation community data are unavailable for other fair rangeland on slopes subject to the white rain to confirm this finding.

Northeast Plot Treatment Effect. Relative to the Northeast reference plot, the CCA showed that the Northeast amendment plot community shifted mostly along the time since disturbance gradient. The Northeast amendment plot improved in total cover (**Table 16a**) but lost most of its grasses (**Table 16b**) after the disturbance of spraying/spreading lime and organic matter on the plants (**Figure 10**). Sideoats grama and blue grama (*Bouteloua gracilis*) comprised about 10 to 15 percent of the vegetation cover before amendment and on reference plots (see **Table 15**). Afterward, grasses in 2013 dropped to 2 percent of the vegetative cover on the circular sampling plots (**Figure 10**). Moreover, vine mesquite (a grass) is now more prevalent on the reference plot than on the amended plot. However, grasses may be more prevalent than the circular plot vegetation data indicate because cover of grasses was 6 percent (bristlegrass, vine mesquite, tobosa [*Pleuraphis mutica*]) based on the CCP dataset. Nevertheless, grasses were still low compared to pre-amendment levels. The disturbance from the amendments (despite no tilling) apparently created the opposite effect desired; it reduced perennial rangeland grasses rather than increasing them and set back the community to an earlier successional stage (see **Appendix B-3).**

It is likely that the disturbance, and not other environmental variables such as precipitation, caused the initial reduction in grasses in the amendment plot because of the opposite initial increase in grasses in the reference plot. Both plots were exposed to the same amount of precipitation. The grasses did not recover in the 5-year period, despite normal to good precipitation conditions in the subsequent years before the drought in 2011 and 2012. Notably, non-woody cover (**Figure 17**), not grass cover (**Figure 10**), was correlated with precipitation in the Northeast amendment plot over time. Therefore, the grass reduction over time probably was not from precipitation changes but likely from the disturbance setting the vegetation back to an earlier successional stage. Honey mesquite, false mesquite, and whiteball acacia (*Acacia angustissima*) shrubs increased in cover right after the disturbance, displacing the grama grasses. The disturbance gave the shrub species an edge in the competition.

The number of shrub species before amendment application was eight, which reduced to five species afterward by 2013 (see **Table 15**). The Northeast reference plot also showed a similar decrease in shrub species, however, from three species pre-amendment to two in 2013. Shrubs are common on steeper slopes in the area, where grasses may be less important, and the benefit to the shrubs may be the focus of remediation on the steeper slopes. However, the results do not support improvements in number of shrub species or large improvements in shrub cover.

Like the North amendment plot, applying amendments to the Northeast amendment plot, which was in fair rangeland condition pre-treatment, may have done more harm than good for its rangeland grasses because the increased disturbance facilitated increased dominance by the annual species carelessweed. This weed increased as it spread to adjacent reference plots of the Northeast plot and other reference plots (see **Appendix B-3**). This trend reversed, as carelessweed declined greatly in the Northeast plots in fall 2014 after the study was completed and was not evident when photographed in 2016. The Northeast amendment plot likely will recover its perennial grasses more quickly than the other plots, as seen by significant improvement relative to the reference plot on **Figure 11**. The lime and organic matter likely were not the cause of improving total cover (white rain did not improve cover, see **Appendix B-21** on why organic matter is not a good candidate). Because the results do not demonstrate that soil pCu or copper uptake was reduced from amendments on this plot, the observed community changes were likely due to disturbance or other non-chemical factors, which degraded rather than improved the wildlife habitat and rangeland condition of the community (see **Appendix B-3**).

Summary of Changes in Grasses and Species Composition for all Plots.

These findings for all three amended plots suggest that remediating to increase pCu with the combination of the three technologies evaluated in this pilot study may change the community substantially and sometimes in a negative way. The resultant increase in potentially toxic annuals is not beneficial, reducing rangeland grasses or species of high importance to wildlife and livestock in the fair rangeland areas. More benefits are observed in the poor rangeland areas, which improve in rangeland grasses. However, it is not clear if the improvement was from increased pCu, given that pCu did not significantly change in any treated plot. Also, the species that increased were species that respond to heavy disturbance from tilling. Most likely, the improvement was from tilling, improving the soil representing poor rangeland condition, which converted the area to good rangeland condition.

The loss of good quality habitat on the North amendment plot and the finding that liming and organic matter reduced grasses on the Northeast plot, in combination with the finding of no concrete evidence that the treatments were effective in remediating chemical impacts, suggests caution in applying treatments in situations that may cause more harm than good. Possibly, the low pCu reduced vegetation cover in areas around the smelter or tailings many years ago resulted in eroded, rocky soils in poor rangeland condition. In that case, tilling could help remediate that resultant physical impact. However, that is uncertain because many areas in the STSIU were overgrazed and no method exists to identify which areas, if any, were physically degraded by historic mining processes verses historic grazing. Given this uncertainty, the benefits and costs of remediating should be carefully weighed.

Possibly, in the long term, after 15 to 20 years or more (see Section 5 in **Appendix B-3**), the perennial species will return to fully dominate in areas remediated to increase pCu, but the pilot study to date does not provide helpful information to support that the resultant community will eventually improve in wildlife habitat or rangeland quality except on poor rangeland sites. Periodic, long-term monitoring of the plots could provide more information on recovery of the fair rangeland communities, and will reveal whether the rangeland grasses will increase in cover compared to their cover before amendment. However, the literature indicates uncertainty of recovery, even in 50 or 100 years. This high uncertainty indicates that it is best not to remediate fair rangeland, where long-term damage is highly likely with very slow recovery. Seeding desired species may accelerate the return of perennials on more level ground that was tilled, but it is uncertain whether it would be effective in already vegetated untilled locations on steeper slopes.

Tilling of the haul road successfully established abundant grasses without seeding. Haul roads on relatively level, poor rangeland areas with low pCu that were ripped 12 to 18 inches deep in 2003 without seeding or amendments have had desirable rangeland grasses growing in the furrows for a number of years. Specifically, the poor rangeland site ERA 2 documented in Newfields 2005 has a ripped haul road adjacent to it that has abundant grasses growing in the furrows that established before the white rain. This location had a measured and calculated pCu of 3.87 and 4.1 in 1999, respectively, and of 6.9 (calculated) in 2013 (Arcadis 2017b) post-white rain. The adjacent unripped area supports primarily mesquite (see photo in **Appendix D**). The haul road grasses became abundant several years after their ripping, replacing weedy annuals that initially arrived (such as Russian thistle). This pattern is similar to the successional trajectory observed in the East amendment plot after tilling (see community composition descriptions in **Appendix B-3**), except the East amendment plot became dominated by annual weeds. This haul road example indicates that tilling alone may help improve vegetation communities on poor rangeland areas that already benefitted from the white rain (pH increased to more than 5). If the white rain did not increase pH enough, tilling plus lime may be needed on these rocky, eroded areas. It is uncertain if remediation for copper is needed on some poor rangelands, however, because the poor quality of the communities may be due to overgrazing and the resultant loss of surface soil rather than to copper toxicity. If copper phytotoxicity is demonstrated for an area, such remediation may be beneficial. Toxicity could be demonstrated using results from the phytotoxicity and community study (Arcadis 2017b) on site soils and with an evaluation of plant signs of copper distress at specific locations (e.g., chlorotic or many dead leaves or branches on shrubs). Notably, an improvement in soil chemistry (pCu) from the white rain event and natural attenuation does not necessarily mean that grasses or cover will increase if rangeland condition is poor. The East reference plot, despite its improvement in chemistry, still has low cover of grasses. Remediation of poor rangeland using lime and/or organic matter without tilling may not be successful because it will still be rocky, compacted soil.

More discussion on integrating the phytotoxicity and community study results with the weight of evidence from this study and other studies (see **Appendix B-21**) is provided in Section 8 to assist in using this information in the FS.

6. Weight of Evidence from Primary Metrics

The results for soil of the treatments for this amendment study support that pH may have increased from tilling when combined with lime and organic matter amendments, even though the plots exhibited high pH greater than 5.5. The effect on pCu from this combination is uncertain due to high variability in copper and low power in the tests, but the results suggest that the pH increase observed in the tilled plots has persisted. The slight decrease in copper in the plant tissue from lime amendments (possibly only by 1 mg/kg) to non-toxic and near background levels of 13 mg/kg in herbaceous plants suggests that the insignificant change in pCu may have had a small effect on copper uptake. The white rain already accomplished most of the potential increase in pCu and decrease in copper uptake. Because the reference plots also increased in pCu (e.g., East reference plot) or exhibited pCu after 5 years (North and Northeast reference plots, **Figure 4b**) similar to the amended plots (possibly because lime took time to infiltrate below a few inches), the chemical benefit of amending or tilling after the white rain already limed the plot may be minimal to non-existent. This conclusion is uncertain because the increases in the reference plot (East) may be just a natural long-term fluctuation in pCu, and the amendment study period is too short to determine this.

The response of the primary metrics (pCu, copper in plant tissue, species richness, percent cover, and the species composition that established) to each management action (tilling, liming, organic matter, and white rain/natural attenuation) for each plot type is indicated in **Table 17**. The effectiveness of each management action was evaluated initially and after 5 years by determining: (1) if the response was an improvement from reduction of copper bioavailability; (2) if so, did it meet target criteria (for metrics with such criteria); and (3) if the response was an improvement greater than that observed on the adjacent reference plot (if reference plot data were available). The appropriateness of the management action for the plot type with its pCu was then assessed and a recommendation made for that plot. The plot types represented included:

- Relatively flat slope in poor rangeland condition with pH over time averaging about 5.7 (with range over time of ± 2.4) and pCu averaging about 4.6 (with range over time of 2.1)[29], as represented by the East location

- Relatively flat slope in fair rangeland condition with pH averaging 6 to 6.6 (range over time of 0.9) and pCu averaging 4.3 (range over time of 1.9), as represented by the North location

- Steep slope that cannot be tilled that is in fair rangeland condition with pH averaging 5.7 to 5.9 (range over time of 1.2) and pCu averaging 3.5 (range over time of 2.5) as represented by the Northeast location.

Because plots with lower pH and pCu were not treated, these recommendations do not necessarily apply to plots that are more impacted. However, **Appendix B-21** assesses other information available for the STSIU combined with this study to assist in separating effects of the three remedial treatments in different scenarios for different soil conditions to ultimately inform FS decisions. This assessment is summarized in Section 8 and **Table 18**.

After weighing the evidence presented in **Table 17**, the Amendment Study shows that the white rain event and subsequent natural attenuation were effective at improving all of the metrics except plant cover. However, pCu change from the white rain did not reach the pre-FS RAC level for the poor rangeland (East) and steeper slope (Northeast) areas[30].

Tilling, combined with lime and the white rain, at relatively flat locations was effective at increasing pCu to above the pre-FS RAC levels and decreasing copper uptake in herbaceous plants. It is unknown if the treatments added more to the uptake reduction than white rain, and if so, likely the contribution was very small. The benefit of this change in pCu to the plant community in terms of richness and cover was only observed on the poor rangeland location (East). However, that benefit to cover likely was from

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[29] Average is before treatment but after white rain and range estimated from reference plot range over time in **Table 4**.

[30] Probably because white rain did not deliver enough lime on flat slope and also runoff losses on steep plot.

decompacting the soil after tilling (see **Appendix B-21**), given the low confidence that the soil pCu changed from either lime additions or mixing the copper in the soil more evenly to 8 inches. The high confidence result is that the white rain increased pCu. Comparison to the reference plots receiving white rain liming shows that vegetation cover changes in the poor rangeland are from decompacting the soil, not from the white rain lime. The benefit was not observed in the fair rangeland North amendment plot, which already had decompacted soil and relatively good grass cover and richness. Its plant community did not improve relative to its adjacent reference plot because of the disturbance from tilling and conditions favorable to weed invasion from both the organic matter and disturbance. Statistical comparisons of tilled to untilled plots suggested that tilling alone to an 8-inch depth was not effective at significantly reducing total copper concentrations in the soil (and hence, probably pCu).

The amendment study did not evaluate a treatment of only tilling, but haul roads in low pCu areas in poor rangeland condition (compacted with soil erosion) were ripped without any other treatment and provide an approximate example of “tilling” only. However, ripping was deeper than 8 inches, with the haul roads ripped to 12 to 18 inch depths. The successful haul road results of an abundant growth of grasses suggest that deeper tilling without other amendments than the white rain may be effective at creating granular soils indicative of good rangeland condition, thus improving wildlife habitat and conditions for livestock. It is unknown if copper concentrations were concurrently reduced by mixing high concentration surface soils with subsurface soils during the decompaction, and if the response was mainly from the physical changes or was a result of both chemical and physical changes. Most likely it was both (see discussion of tilling effects in **Appendix B-21**).

Spraying lime without tilling was only evaluated on the steeper slope location (Northeast) and was not effective at increasing pCu or plant uptake of copper. However, when lime was applied with tilling on the two relatively level plots, the combination was effective at increasing pH, but not necessarily pCu. Effectiveness of spraying lime alone on relatively flat areas is unknown because this combination was not evaluated in this pilot study. However, the white rain deposited “lime” and indicated high effectiveness of lime alone in increasing pH and pCu on relatively level areas, with more limited effectiveness on steeper areas.

Though species richness increased, the large change in soil pCu from the white rain lime (increased by more than 1 unit) did not result in a change in total vegetative cover amounts on the relatively flat North and East areas that would benefit wildlife or livestock, whether in poor or fair rangeland condition (see **Appendix C-21** for discussion of white rain effects alone). Therefore, benefits of adding lime alone to the plant community seem limited, especially if pH is high (above 5.5). The white rain report (Arcadis 2017a) showed that pH increases from liming were generally restricted to plots with pH < 5.5.

Organic matter may not have been effective as measured by the primary metrics (pCu did not significantly increase, nor copper uptake reduce) and possibly was detrimental to the plant community. Statistical power was poor to detect a change in pCu, creating uncertainty about its effects. Based on a literature review, organic matter applications in semi-arid to arid areas often lead to decrease in species richness, invasion by weedy annual species, and very little improvement in the vegetation community (see **Appendix B-21**). Also, the haul road tilling produced a community with fewer annual species invading, possibly because organic matter was not applied.

A thorough or quantitative evaluation of copper phytotoxicity was not conducted as part of this study; however, copper phytotoxicity in individual plants, as indicated by visible tissue necrosis, chlorotic leaves, dead stems, or browning that was different in amount or timing from natural senescence, was not observed during surveys in either the treated or reference plots. The health of the communities of the reference and treated plot appeared the same. Notably, the signs of phytotoxicity may not have been seen due to the timing of the first vegetation survey, which took place after the natural lime application caused by the white rain.

The effect of the remediation on the plant community and ecosystem as a whole must be evaluated before recommending which remedial actions are appropriate for each plot type. The overall effect of the pilot study remediation was an increase in potentially toxic and aggressive annual species of low value to livestock and wildlife, species that have gained a foothold in response to the disturbance and possibly the increase in organic matter, or from being introduced in the manure. The increase was large and of most concern in the tilled plots. In particular, carelessweed became dominant, and this species accumulates nitrates to high concentrations in its tissue from soils with high nitrogen content. Soils in this study had elevated nitrogen from organic matter applications, which puts cattle at risk to this toxic species. The nitrates can accumulate to levels that can poison and kill livestock.

Chino is concerned about the ramifications of recommending remedial actions that may result in death of livestock. Golden crownbeard, which may have been introduced in the manure or just invaded after tilling, also is dominating and carries toxins of concern to livestock. These aggressive species may be reduced over time, as seen during later visits in 2014 and 2016, allowing more perennial grasses to establish, but carelessweed is still abundant in the North plot. In fair rangeland areas, the successional process after a major disturbance can take many decades to recover its original perennial cover and favorable rangeland grasses (see **Appendix B-3**). Disturbance on a large scale in the STSIU may invite many invasive species as well as aggressive annuals and degrade the quality of the current habitat for a long time.

Rangeland grasses in the area do best in soils with little disturbance and, therefore, areas in fair rangeland condition similar to the North location should not be tilled or damaged by spraying lime and spreading manure, even if pCu is low. The pCu was low (estimated to be around 2) on the North plot in 2006, yet after the white rain in 2008 and even 5 years thereafter, it decreased in cover, while the adjacent reference plot increased in cover[31]. Remediation is ultimately designed to improve plant communities, not to increase pCu (because pCu is being increased only to improve plant communities), and this study supports that the amendments and tilling did not improve the plant communities in fair rangeland condition.

Considering the weight of evidence in **Table 17**, the best approach in areas where the pCu has been steadily increasing after the white rain event (such as North and East locations and locations identified in the white rain report, Arcadis 2017a) is to allow that trend to continue and to monitor natural attenuation and assess if it reaches the pre-FS RAC criteria. For relatively level areas showing no trend in improvement in pCu, and where the rangeland condition is poor, the site could be considered for liming and tilling to increase pCu if low pCu is the cause of its condition. Tilling is recommended before trying the combination of liming and tilling given the high success rate of the tilled haul road. Addition of organic matter is not recommended. Seeding with desirable species may be a better choice than applying organic matter because organic matter increased soluble copper and was not needed to establish grasses in low pCu, poor rangeland soils that were ripped to reclaim haul roads. However, seeding is not necessary because seeding was not necessary to establish desirable grasses on the haul roads.

For steeper slopes that cannot be tilled due to safety or equipment-related constraints in rough terrain with boulders, the remedial options are limited, and none evaluated for this study are beneficial. The results of this study supported no significant change in pCu or reduction in copper uptake on the steeper slopes with any of the three remedial

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[31] Cover (but not richness) was still higher in 2013 in the North amendment plot than its adjacent reference plot, but this was also the case before the white rain.

technologies. Application of lime and organic matter mainly disturbed the plots, increased soluble copper, and decreased rangeland grasses, appearing to do more harm than good.

These conclusions, based on the weight of evidence, only apply to the remedial techniques assessed in this study. Much uncertainty is associated with these conclusions because this investigation was designed to be a simple, initial pilot study, not a research study. Treatment combinations were not replicated, and each location exhibited unique conditions that confound interpretation of the treatments on pCu and limit generalization of results to the same type of areas. The conclusions may not be easily extrapolated to the full diversity of types of areas found on the STSIU (e.g., bedrock areas, poor rangeland with granular soils). Uncertainties associated with this amendment study are discussed in Section 7. After reviewing information beyond this study, a summary of recommendations for each remedial technology based on evaluating each separately is also presented in Section 8.

7. Uncertainty

This study was designed as an exploratory pilot study intended to evaluate the effect of amendments on copper, assuming that a large effect would occur that would be detectable with a simple design with four plots. As it was not a research study, it is difficult to interpret the results with complete certainty. However, using quantitative tools and qualitative concepts and graphs that analyze data in different ways, support for the conclusions may be enhanced and the degree of uncertainty reduced. A drawback of the study design is that the 2 years of monitoring data before treatment had to be reduced to one sampling period after the white rain.

The white rain weakened the ability of tests to detect differences, but at the same time provided a valuable natural experiment of the effect of lime on the soil and vegetation communities across the STSIU. This section discusses uncertainty associated with conclusions that depend on: (1) shifted locations of some study plots just before treatment, (2) adequate power to detect differences, (3) limited reference data and substitutions of less collocated data, (4) ERA plots, (5) assumptions of persistence of effects, (6) accuracy of dormancy bias adjustments, (7) assumed long-term recovery, and (8) no climatic interactions biasing results.

7.1 Moved Plots

As discussed in Section 2.1, the North and Northeast amendment and reference plots were moved from their original 2006 locations in July 2008 and May 2008, respectively. Although the new locations were nearby (**Figure 2**) and chosen so that pre-amendment site conditions were as consistent as possible with the original locations, underlying differences exist. For example, the Northeast plots were both moved to a less steep location, the North reference plot was moved to a less rocky and erosive location, and the North amendment plot was moved to a less erosive location. Baseline vegetation condition was sampled before plots were moved, and the baseline soil condition was sampled in the North plot before the plot was moved (whereas baseline soil but not vegetation was sampled after being moved for the Northeast plot). It is uncertain how representative the moved plots are of the original locations for the vegetation for both locations and for soil at the North location. If they are very different, the results may partly reflect these differences, not differences from treatments.

7.2 Statistical Power

The inherent variability in sampled soil constituents and sampling error introduce uncertainty in conclusions. If the statistical power of the analyses is too low to detect a significant and biologically important difference resulting from treatments, the results and study conclusions become more uncertain. The lack of power to detect significant differences can occur when sample sizes are insufficient or when soil constituents are highly variable. Power results are presented in detail below for the various statistical comparisons in this report that were statistically insignificant to identify which results may pose highest uncertainty.

7.2.1 Comparison of Amendment and Reference Plots (Table 11)

A sample size analysis was conducted in 2012 to evaluate if differences in soil pH and pCu likely could be detected between amendment and reference plots in a paired t-test with sufficient power. This paired t–test evaluates changes in space, not time (same years compared but one is a treated and one a reference plot). Such an analysis requires specifying the standard deviation[32] obtained from statistical tests applied to past data. It

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[32] For ANOVAs, the standard deviation is the square root of mean square error in the ANOVA table.

also requires specifying the sample size planned, desired confidence, and desired target effect size (e.g., change in pH in units or percent change in copper) considered biologically meaningful. A power analysis in 2012 (Arcadis 2013) indicated that sample size needed to be increased from three to eight per plot. Switching to eight samples was estimated to provide:

- 87% power to detect a difference of 1 s.u. in pH with 95% confidence, using a standard deviation of 0.79

- 70% power to detect a 1.5 unit pCu difference with 90% confidence, using a standard deviation of 1.75 units

When only three samples were collected, the data provided

- 25% power to detect a difference of 1 s.u. in pH with 95% confidence, using a standard deviation of 0.79

- 27% power to detect a 1.5 unit pCu difference with 90% confidence, using a standard deviation of 1.75 units

However, rather than comparing pairs of plots for each location individually, the final statistical test used in **Table 11** to detect differences from treatment was a two-way ANOVA for each of the four locations with time and treatment as factors in each of the 26 comparison (4 plots x 6 soil analytes each plot). This latter approach increases the power of the test so that smaller differences (effect size) between the pairs of plots can be detected with statistical significance. Both pH and pCu were significantly higher on amendment plots than reference plots at $P < 0.05$ for all except the North location, which exhibited a significant difference at $P < 0.10$ (**Table 11**). Therefore, with the increase in sample size in the latter 2 years, power was adequate to detect differences at the 90 or 95% confidence level between the amendment and reference plots in two main metrics (pH and pCu), even though sample size was not the same in every cell of this two-way ANOVA. The numbers of samples were equal or close to equal for each treatment within each time period, however, and this increased robustness of the unbalanced ANOVA. Unbalanced data are expected in environmental monitoring programs and often still give acceptable results (Smokorowski and Randall 2017), particularly if every year is sampled.

Below is a power analysis in SAS (GLMpower procedure) for comparisons in **Table 11** that were not significant. Tests in that table that produced statistically significant results at P < 0.05 or near significant results (P<0.10) are not addressed because they had enough power to identify differences with confidence of 90 to 95%. For all the soil constituents tested, power was adequate to detect significant differences between means of a 20% difference or more, as shown in P values in **Table 11** (all significant) except for copper in the North and Northeast plot locations and soluble copper in the North plots, as discussed below.

<u>Copper</u>. Ideally, power should be at least 80%, though lower levels of 60 to 80% indicate that a significant difference still might be detected for the majority (at least 60 to 80%) of the time. If the effect size for copper concentrations between treatment and reference areas is targeted to be a 20% difference (and a maximum 20% difference through time) with 95% confidence, then the power is 60% probability of detecting a difference in copper for the Northeast plot (standard deviation of 880 mg/kg) and 33% probability for the North plot (standard deviation of 466 mg/kg) based on results from the SAS procedure GLMpower. This low power of the tests for these two plots as a result of high variability in copper concentrations is creating uncertainty in the conclusion of no difference from reference for copper in these two plots (but see Section 7.3.3 for more complete assessment of uncertainty in copper results below).

<u>Soluble Copper</u>. The soluble copper for the North plot has even lower power than copper because of low total sample size (n = 29 vs. 82 for other constituents). The low sample size was a result of removing all 2011 and 2012 soluble copper results from the analyses because they inadvertently were analyzed at a 20:1 SPLP dilution ratio, not 5:1. The ANOVA for soluble copper had less than a 20% percent probability of detecting a 20% difference from the treatment (with 1.62 log units SPLP standard deviation). Nonetheless, a significant difference in SPLP was detected in the East and Northeast plots because the difference in soluble copper between the two plots was much greater than 20%. However, uncertainty is high around the conclusion that soluble copper did not differ from reference for the North plots.

7.2.2 Differences over Time and Space: BACI Results (Tables 9a and 9b)

The results in **Tables 9a** and **9b** using BACI analysis focus on effects of treatments over time in addition to post-treatment differences in space between the adjacent paired plots. The significance of the interaction term is key to determining treatment effects. As will be discussed below, the results in **Table 9a** and **9b** show trends of weaker power for copper, soluble copper, and pCu in the BACI. The soil pH, however, had adequate power.

Copper. For copper tests in **Table 9a**, the power was not very high for the targeted effect size scenario. If the amendment and reference plot have similar means (within 3%) before treatment, and the targeted difference is to detect an increase by at least 20% after treatment, then the power to detect the interaction term is only about 15%. The power is also only 25 to 30% to detect significant main effects of treatment between plots (space) and periods (time) (using standard deviation of 651 mg/kg for liming, 646 for tilling from these tests).

pH and pCu. For pH and pCu tests in **Table 9a** (with 0.65 standard deviation for pH and 0.95 for pCu from these tests), the power is adequate for pH for the scenario tested but is more limited for pCu. If pH and pCu means are similar between reference and treatment plots before amendment or tilling application (within 0.05 s.u), and it is desired to detect an increase by 0.5 s.u. post-treatment for pH and by 1 unit for pCu, the power to detect the interaction term is 94% for pH (and main effects are 82 to 94%) and 45% for pCu (and main effects are 50%).The higher power for pH is because pH has less variability and was more intensively sampled than copper in May 2008 (pH had 10 to 12 samples per plot before treatment compared to 2 samples per plot for copper). The pCu power of 45% falls between pH (94%) and copper (15%) as expected because it is calculated from both, and the high copper variability reduces its power.

These power analyses indicate that it is unknown and uncertain if the insignificant interaction term showing no benefit of the treatment for copper or pCu was because of treatment ineffectiveness or because of weaker power of the test. For pH, the tests had high power, and therefore the one significant interaction term in **Table 9b** (effectiveness of tilling), provides some confidence (but only 90%) that tilling the lime into the soil increased pH. It must be remembered that the focus of the treatments was on increasing pH, not reducing copper, and to that end, the tests (and white rain report, Arcadis 2017a) support that adding lime when tilled into the soil seems to be effective at changing pH, which should boost pCu upwards. Because of the small effect on pH and high variability in copper, the calculated pCu change from treatments was not detectable with the available sample size and power but logically could have improved a small amount if pH improved and copper did not change.

Soil pH uncertainty. Although the BACI tests had high power to detect small differences in pH, it is difficult to interpret small changes in pH with certainty because of limited confidence, lack of replication in the study design, variability in pH over time, moving the North plot just before treatment, and uncertainty as to the depth of soil that was neutralized. The conclusions of improved pH in tilled plots is based on 90%, not 95% confidence. More importantly, the study design did not include replication of the same treatment in the same topography and rangeland conditions (n = 1 for each combination of conditions). If the same results had been observed in a second set of plots with steep versus level and fair versus poor rangeland condition, the results could be more conclusive and the interpretation less speculative. Soil pH is variable from year to year depending on the randomly chosen sample locations, making conclusions about pH more difficult.

For example, this study shows that the East reference plot achieved a final pH of about 6 in 2013, while the white rain report (Arcadis 2017a) shows that the East reference plot then decreased to lower pH in 2014 (down to 4.9), illustrating that conclusions based on a short time frame of 5 years are uncertain. The North plot was moved just before treatment (and not sampled in new location), which requires assuming that soil conditions did not change from the move, an uncertain assumption. Finally, because pH was not measured in different strata within the 0- to 6-inch zone, it is unknown exactly how deep lime penetrated the soil in the amendment plots over the 5 years. Findings reported in the literature support that migration of the lime initially may not reach a 6-inch depth where many roots grow. In arid, sandy soils impacted by copper mine leachpads in Australia, Golos (2016) tilled soil to 30 cm after liming and found that the lime did not neutralize soil below 4 inches. Possibly, the lime will be more effective over time, but this is unknown. For these various reasons, it is uncertain if the improvement in pH from the treatments beyond the white rain effect is a real trend.

7.2.3 Early Year Differences over Time from Amendments for TOC and C:N (Table 10)

TOC and C:N did not have data available for a BACI analysis and were analyzed through time before and after treatment without reference data for comparison. Using just one sampling period (0.5 year) post-treatment for TOC and C:N, the power of the ANOVA was limited to 50% to detect a target of a half percent difference in TOC and of detecting a C:N ratio difference of 5 after a half year (using standard deviation of 0.442 for TOC and 4.45 for C:N). However, when increased to two sampling periods to evaluate effects after 1.5 years, the power was sufficient to detect significant differences (**Table 10**). Thus, these data were adequate to identify trends in these soil constituents in the early years following treatment if evaluated at least 1.5 years after treatment.

7.3 Limited Reference Data

The pilot study design of the Work Plan was not originally focused on understanding regional variability of plant communities, copper, pCu, or nutrients, including the variability created by the unanticipated white rain event. It is difficult to determine if changes are due to treatment or due to effects unrelated to treatment caused by climate, operational changes, vegetation succession, or the white rain. Longer-term datasets in reference (untreated) areas would be required to assess the variability in the measured parameters in this study and if treatment effects fall within that variability, but are unavailable. The study attempts to overcome this uncertainty by including reference data where available or evaluating other datasets and information available for the region or Site, but ultimately, the study results and conclusions carry a substantial amount of uncertainty as discussed below.

7.3.1 White Rain Effects on pH, pCu, and soluble copper

The white rain analyses have the limitation of having no reference areas unaffected by the white rain. Changes are ascribed to the white rain that could be from other factors including operational changes over the years. Also, soluble copper data are not available on amendment plots pre-white rain to evaluate white rain effects. The only soluble copper data available to compare were the ERA data, and uncertainty exists on the comparability of soil chemistry of ERA locations (with 1999 pH < 5.5) with the pre-white rain chemistry in the amendment plots.

7.3.2 Treatment Effects on C:N, TOC, and Soluble Copper

Analysis of treatment effects on C:N, TOC, and soluble copper do not include data from reference areas sampled in the pre-treatment period. Pre-amendment and pre-white rain C:N and TOC were collected on the amendment plots before they were treated (in 2006 and 2008; see **Table 4**) but could not be paired with collocated or less collocated reference plots for a BACI analysis because such data had not been collected elsewhere nearby. Therefore, a BACI that accounts for regional trends and variability could not be performed for these parameters. Instead, two ANOVA tests replaced the BACI. Reference and treated plot means, averaged over the period of 2010 to 2013, were compared (**Table 11**), and the treated plots before and then 0.5 year and 1.5 years after treatment were compared (**Table 10**). More years were not compared because regional trends may interact with treatment trends, which cannot be compared to reference areas to remove the effect.

To evaluate uncertainty in these results, a graphical, more qualitative analysis of the trends was additionally performed by examining trends of all study plots on **Figure 4b**. This examination of **Figure 4b** trends, combined with results of statistical tests in **Tables 10** and **11**, support that, despite fluctuations, the TOC increased and C:N decreased initially and the change persisted, with TOC being higher and C:N lower in the amended plots than in the reference plots. Evaluating all the data three ways helps reduce uncertainty associated with not having a reference area pre-treatment.

Effects of adding lime and organic matter amendments on soluble copper were analyzed similarly without a BACI, and supported that soluble copper significantly increased just after amendments were applied (**Table 10**). However, **Figure 4b** (ignoring data from fall 2011 to spring 2013, which had 20:1 dilution ratio) shows soluble copper fluctuating substantially in all the plots, and the initial increase may be a significant large fluctuation that does not represent any meaningful increase when compared to the high variability over time. **Table 11** shows that soluble copper is significantly higher in the amendment plots than in reference plots after 2010. These results do not foster a consistent interpretation, and therefore, conclusions about lime and organic amendments on soluble copper are not very reliable.

To evaluate the effect of tilling on soluble copper that incorporates variability over time, a BACI was performed using the untilled Northeast plot as a control plot and the North and East amendment plots as the treated (tilled) plots (**Tables 19a** and **19b**), in the same manner as pCu and copper were analyzed for tilling effects in Section 7.3.3 below. Though the Northeast plot is an uncertain control because it has a steep slope, the results show that the high variation in soluble copper, particularly in the Northeast plot, obscures the initial increase in the East and North amendment plots in soluble copper (log transformed) observed on **Figure 4b** (insignificant interaction term of P = 0.47, **Table 19b**). As stated earlier, the soluble copper data are highly variable, tests have low power, and much uncertainty exists around the results.

7.3.3 Alternate Statistical Analyses without Less Collocated Plots

The locations of reference plots in the pre-treatment year were not consistent for BACI analyses of copper and pCu, as discussed in Section 5.2.4, creating some uncertainty. The use of different reference plots in early pre-treatment years (less collocated plots) than in later years (collocated plots) was required because no pre-treatment data for copper or pCu were available. The use of inconsistent reference plots, some of which are less well collocated, creates uncertainty because copper differences may be due to inherent locational differences rather than representing trends in untreated plots over time. Therefore, an alternate statistical analysis was performed for copper and pCu without using the less collocated reference data. The alternate lime and organic amendment analyses were chosen to be the same ANOVA analyses run on soluble copper, TOC, and C:N discussed in Section 7.2.2. No reference data were included, only a comparison of the pre- and post-amendment periods. The tilling alternate analysis selected excludes reference plots, but still includes the amendment plot that was not tilled, which served as the only reference in a more limited BACI. Note that no alternative analyses were needed or conducted on pH because the BACI included the same consistent and collocated reference plots every year.

For the alternate statistical analyses on effects of lime and organic matter, a mixed model ANOVA without reference plots (with plot location and sampling period as random factors) was used. Because the soil copper may have decreased in many areas after 2010[33], later years were first excluded to avoid amendment effectiveness erroneously being attributed to regional trends. In a second analysis, these later years were included when calculating the post-treatment mean to determine if results were the same. In a third step, the results were compared to graphs of trends for each study plot to assist in the interpretation. Finally, the results were compared to the BACI analysis results in Section 5.2.4 (**Tables 9a** and **9b**) to see if conclusions differ and are uncertain or if the various analyses evaluated together as a weight of evidence determination support a reasonable final conclusion.

The mixed model ANOVA without reference plots produced the results discussed by treatment in the following sections.

7.3.3.1 Lime and Organic Matter

To evaluate lime and organic matter amendment effectiveness using an alternative model, a mixed model ANOVA with no comparison to a reference area was the test used. Copper decreased immediately after lime and organic amendments were applied, but the decrease was not statistically significant in the first 0.5 year or 1.5 years ($P > 0.45$, **Table 20**). The difference was almost a significant decrease from 1,956 to 1,466 mg/kg, when averaging across all five post-amendment years ($P = 0.095$). Soil pCu also did not show a significant increase in the first 1.5 years ($P = 0.462$) after amendment application, but an almost significant increase (at 90% confidence) from 4.1 to 5.1 in pCu when averaging across all post-amendment years ($P = 0.095$, **Table 20**). A challenge with only using the first 1.5 years post-treatment is that the sample size is low, reducing power to detect differences given the high variability in copper and pCu. A challenge with using all 5 years is that copper or pCu may be decreasing over time post-amendment

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[33] See white rain report (Arcadis 2010a) showing reduction in copper after 2010, which was also observed on the North and Northeast amendment plots.

affecting the post-treatment mean of both copper and pCu, and this decrease may be unrelated to the treatment.

Based upon **Figure 4a**, the decrease in copper after treatment, whether measured after 0.5, 1.5, or 5 years, appears to be driven mostly by the North amendment plot, in which copper concentrations continued to significantly decrease over time in the post-treatment period (see minus sign next to legend on **Figure 4a**). This same downward trend was observed in the North reference plot from 2010 to 2013 (**Figure 4a**). The BACI analysis in **Section 5.2** may shed light onto this result. The BACI indicated that the change in copper was not due to treatment because both the amendment and reference plots had a downward trend in mean copper (**Table 9a**), and therefore the interaction term was insignificant (**Table 9b**). Though each analysis has shortcomings, the weight of evidence based on these different analyses with and without reference plots suggests that the addition of lime and organic matter did not change copper concentrations. Thus, despite uncertainty, the conclusion from the BACI alone appears to be reasonable.

The increase in pCu in the 5-year analysis was influenced by pH changes in the later years over time as well as the decrease in copper. However, the conclusion is the same, that the increase in pH and decrease in copper in some reference plots (East and North reference plots, respectively; **Figure 4a**) from 2010 to 2013 likely represents a regional trend unrelated to the treatments. A decline in copper and increase in pCu after 2010 were also reported for the larger STSIU area in the white rain report (Arcadis 2017a), though the high variability in copper makes significant trends over short 5-year periods uncertain. The finding of no significant change from the lime and organic matter treatment in the early post-treatment years supports the conclusion of minimal effect of treatments on pCu, as does the BACI result in **Table 9b**.

The BACI is only reliable if the less collocated reference plots have copper concentrations and variability similar to those of the collocated adjacent reference plots in 2008. Because this is unknown, the above alternative analyses were evaluated in this section. However, the less collocated reference plots might have been similar to the collocated adjacent reference plots because the mean concentration of the less collocated reference plots before the liming treatment was similar to the mean of amendment plots before treatment (approximately 2000 vs. 2200 mg/kg for amendment, **Table 9a**). It is unknown if the collocated reference plots would have exhibited the same general concentrations (2200 mg/kg) during the pre-treatment period in 2008, but it is quite likely because the slightly higher average copper in the less collocated reference plots matches the finding that the pH tended to be slightly lower in the collocated reference plots than in the amendment plots during the pre-treatment period (5.8 vs.

6.0). It matches expectations because soil copper and pH often are negatively correlated in this area due to stack emissions. The standard error of the mean of the less collocated reference plots was also similar to the amendment plots during the pre-treatment period (435 vs. 450 for lime, **Table 9a**). This suggests that the less collocated plots may have been adequate substitutes for the adjacent, more collocated reference plots. However, conducting the alternate analyses as well as the BACI provides the most complete picture of the uncertainty of the results, given the limitations in the study design. The more complete picture supports that lime and organic matter additions probably did little to change copper and pCu.

7.3.3.2 Tilling

For the alternate analysis, the Northeast amendment plot was used as the only untilled reference (control) in a BACI. The BACI was a mixed-model ANOVA that included trends in the tilled plot and untilled control over all 5 years post-treatment. The results showed that copper did not change in a significantly different way in the tilled plots than on the untilled plot; in other words, the interaction term was not significant (**Tables 19a** and **19b**). Both the original BACI analyses in **Table 9a** and **9b** (which included less collocated plots) and the new analysis without adjacent reference plots support the conclusion of no effect of tilling on copper concentrations. The graphs on **Figure 4a** show that copper concentrations are highly variable in the untilled Northeast plot, making it difficult to identify changes in copper in the tilled plots relative to the Northeast amendment untilled control, even though the North amendment plot mean shows a drop after treatment and a continued decline post-treatment (not evident in the East amendment plot). Correspondingly, the power of the BACI tests with or without less collocated plots are low with regard to copper (15 to 30%, see Section 7.2), and there is uncertainty associated with conclusions of no effect of tilling.

The same analysis used for total copper was employed to evaluate the effect of tilling on pCu using the Northeast amendment plot as the only reference plot. The Northeast amendment plot was limed, however, which can potentially increase pH and influence pCu. Therefore, this analysis evaluates if tilling contributes beyond the effect of the lime on the Northeast plot. The tilled plots tended to increase in pCu more than the increase in the untilled plots (**Figure 4b**), but the interaction term was not significant (**Table 19b**). The tilled plots exhibited significantly higher pCu than the untilled plot, but this occurred both before and after treatment (**Table 19a**). Thus, tilling had no significant effect on pCu. A confounding factor is the steeper slope of the Northeast plot, which was limed but not tilled, and the difference in the steepness of the plots may be influencing results, not just the tilling difference. Additionally, the power is weak for these alternate pCu tests (about 30% for interaction term with standard deviation of 1.07), creating uncertainty around this result. The original BACI with adjacent and less collocated reference plots produced similar conclusions (**Tables 9a** and **9b**), whereby the tilled plots tended to increase in pCu more than the increase in the untilled plots (**Figure 4b**), but the interaction term was not significant. Possibly, the lack of significance in the BACI is due to low power, but both tests give similar results, with significance at an 80 to 82% confidence level. Because copper is highly variable, detecting changes in copper or pCu from the treatment is not possible without more sampling. The graphs on **Figures 4b** and **5** also do not show any clear indication of beneficial effect of the treatments on pCu in any of the amendment plots in 2013, because they have similar pCu in the reference and amendment plots in 2013, or the difference between amended and reference plots in 2013 is about the same as in early 2008 before amendments were applied.

Overall, the alternate analyses support conclusions of the original BACI analyses that treatments did not significantly affect copper or pCu. However, the pCu results are highly uncertain because although pCu improved after amendments and tilling, power to detect whether the improvement was significant was poor.

7.4 Use of ERA Data

Using ERA plot data in soil comparisons (e.g., BACI) could create uncertainty because they represent a dataset that averages lower copper concentrations and higher pH than the data from the amendment study area. Therefore, use of ERA data was limited to locations with depressed pH (<5.5) and then used only as supporting information in graphs and tables for interpretation purposes only, and never combined with amendment data in any analyses, with one exception. The exception was one ERA plot (ERA-2) used as a less collocated reference for the East plot. The ERA-2 location was used because it is a rocky, relatively flat site dominated by mesquite with low pCu (4.1; **Appendix B-15**), very similar to the East reference plot (see **Appendix B-21**).

7.5 Persistent Effects of White Rain on pH and pCu

Current results indicate that the white rain had a beneficial effect on pH and pCu. However, 5 years may not be long enough to evaluate persistence trends for the white rain and amendments with certainty, and 5-year monitoring as part of the FS will indicate if persistence of the white rain observed to date is sustained. Additionally, data are variable, particularly for the Northeast plot, making persistence more difficult to detect or not detect when downward fluctuations lead to values similar to those seen before the white rain event.

Note also that if the white rain (which added lime to the soil) is not persistent, then liming may not be an effective remedial alternative, at least for the amount of lime delivered by the white rain. However, data to date suggest that the white rain is persistent and by extension, liming at the level of the white rain (see white rain report, Arcadis 2017a) may be effective in raising and sustaining pH where pH is low.

For pCu, copper declined since 2010 (with statistical significance) in many areas in the site including the amendment locations (Arcadis 2017a). Along with pH increasing in the East reference plot, this copper decrease may be contributing to the continued increase in pCu over time in both of the reference plots; however, copper levels in soil demonstrate high variability, making this possibility uncertain. **Figure 4a** shows that copper concentrations decreased and pH increased in reference plots (except West plot) between the pre- and post-periods, which supports the likelihood of attenuation due to the effect of the white rain combined with other possible factors that may have reduced copper, including cessation of the smelter operation in 2002 and subsequent surface erosion of copper from surface soils (no longer being replaced by smelter deposits). Although the East reference plot is trending upward and might reach the pre-FS RAC, this is not guaranteed or very certain given the variability observed in estimated pCu from 2006 to 2013 (**Figure 4a**), but should be considered when evaluating remedial alternatives.

7.6 Persistent Effects in Soil Chemistry of Treatments

High variability in concentrations over time results in uncertainty in the ability to detect small changes over time, particularly in the differences in pCu between plots. The difference in pCu between treated and reference plots may or may not be real, and tests had too little power to state which was the case conclusively. The difference nonetheless was used to evaluate persistence of treatment effects, in case they were real.

The appearance of a diminishing difference between the amendment and reference plots in pCu observed in the East plots (**Figure 4b**) is important and could indicate a “lack of benefit” of the amendments and tilling. These results could indicate that liming, tilling, and organic matter application is not very effective or needed because natural attenuation would have had the same effect on soil pCu 5 years after the white rain, as shown by the untreated East reference plot. However, the North plot results present a different conclusion. The regression slope (trend) for pCu is not significantly different than zero for the difference in the North plots (P = 0.327), indicating no significant change over time (**Figure 5**) and possible persistence. However, the North amendment plot declined in pCu slightly in 2013 during the last two sampling periods (see **Figure 4b**), which though not significant, creates some uncertainty as to the effectiveness of the treatments in that plot in the last year. The plot still exhibits pH above 5.0 (above the pre-FS RAC) after 5 years. There is uncertainty in identifying small changes over time in the North plot, given the observed variability, and that the effect of tilling, adding lime and organics to soils that already have relatively high pH may not be that detectable relative to reference plot changes. Additionally, persistence of pCu changes from the amendments and tilling was only evaluated for 5 years, and one cannot predict with certainty the persistence longer than that. The East plot results suggest natural attenuation may be as effective at changing the soil pCu as the treatments if given enough time. The North plot results, which show no significant trend in the pH difference, do not support nor refute that conjecture. The Northeast plot pCu shows no significant slope in the difference over time either, but its final pCu is very similar between the reference and amendment plots and as discussed previously, showed no benefit from treatments. Overall, uncertainty exists as to whether treatments changed the soil chemistry enough to provide any benefit, and persistence of the benefit may be a moot point.

Factors that add to the uncertainty of the persistence are that the North amendment plot for pH before treatment was not the same exact plot after treatment (moved 100 feet) and for copper, all reference plots before treatment also were not in the exact adjacent reference plot, but were in less collocated plots nearby (see **Section 7.1**). Also, in the early years, a sample size of two to three was too small to estimate mean copper concentrations with much precision before and immediately after treatment, even if in the same plot (see **Section 7.3**). Overall, the conclusion was that pCu results from the BACI analysis suggest that the treatments may not be beneficial in terms of improving the locally heterogeneous soil pCu, though pH was improved slightly when lime was tilled into the soil. This conclusion is uncertain given the short time frame of the study and variability in the data.

7.7 Dormancy Bias

The pilot study was not designed to evaluate change in plant copper uptake, and the pre-treatment tissue samples were collected in a different season (dormant season) than the post-treatment samples; therefore, there is much uncertainty in the results and interpretation due to a dormancy bias. Adjustment for the dormancy bias was performed nonetheless to facilitate interpretation of changes in plant uptake of copper to inform decisions for the Feasibility Study.

Copper concentrations measured in senesced vegetation in the winter dormant period were adjusted to growing season concentrations using a bioaccumulation model developed with ERA data (**Appendix B-7**). The use of a model to allow comparisons of data carries a number of associated uncertainties. First, comparison to an ERA bioaccumulation model in **Appendix B** required estimating proportion of grasses and mesquite biomass in leaves vs. seeds because ERA tissue concentrations were not reported for the whole plant. The proportions were assumed to be 15% of biomass for seeds of grasses and 5% of biomass for pods of mesquite, based on the literature (see footnote in **Table 7**) and field observations.

Second, the copper concentrations appeared to be biased high during the dormant season and were adjusted downward by 35% to remove the bias based on the bioaccumulation model. The literature supports that copper can be higher in senesced vegetation than growing vegetation for grasses on a mine site. In a paper that described copper sampling at a mine site in England with elevated copper (Hunter et al. 1987), tissue concentrations in grass species were much higher in the dormant season, possibly because copper moves into plant cell walls and can become more concentrated as cytoplasm is lost when the plant cell dries or freezes, a process observed in trees (Koelling 1996, Lyons et al. 2012).

However, some studies of herbaceous plants in areas without elevated copper show copper moving into the seeds and roots just before the dormant season or as leaves senesce, which produces a lower copper concentration during the dormant season (Himmelblau and Amasino 2001, Mira et al. 2001, Sankaran and Grusak 2014). Copper could also leach from leaves during winter from precipitation, resulting in lower concentrations. Though precipitation during the months of November to mid-March 2008 was minimal (0 to 0.1 inch, Hurley weather station), the differing results of these group of studies in the literature indicate uncertainty as to whether copper actually was biased high in the senesced vegetation.

Both the unadjusted and adjusted concentrations are presented in this report because of this uncertainty, though conclusions are based upon the adjusted concentrations. The conclusions on the effect of the white rain and amendments on copper uptake should be interpreted with caution, as the effect may be much larger or could be smaller than reported with the adjustment.

7.8 Long-term Effects of Amendments on Vegetation

Long-term recovery in the vegetation to its pre-white rain condition or natural condition is uncertain. It may be so slow that it offsets any benefit of reducing copper uptake, particularly for fair rangeland plots that lost their grasses. However, many uncertainties are associated with evaluating effects on vegetation because of limited data, other factors that affect vegetation in the field, and the study was not designed well to separate effects. The CCA was used to identify if some species are responding more to chemical than physical factors but the CCAs carry inherent uncertainties that have the potential to lead to erroneous conclusions. The CCA is dependent on the few plots used to develop the CCAs. If more plot data were obtained, the relationships may shift. The many uncertainties associated with the vegetation results and interpretation are discussed in **Appendix B-21**, which brings in information and data from other studies to help reduce the uncertainties, when possible.

The overarching conclusions for the vegetation uncertainty are that any remediation undertaken on the STSIU should be considered carefully as to its: 1) slow rate of recovery of the vegetation after disturbance that may not offset the benefits and 2) variability in copper and pCu making detecting differences or areas needing remediation difficult. Unless an area is overgrazed and mostly barren with some mesquite, remedies evaluated in this report may not produce any easily detectable benefit now that the white rain has occurred. This leaves few options for remediation. Scraping off topsoil with low pCu of fair rangeland areas without seeding could create poor rangeland conditions that may never have grasses recover to original levels[34]. Natural attenuation may be the best alternative, even for overgrazed barren areas that already have little topsoil because the pCu may be improving over time (see East and North reference plots, but more years of monitoring are needed to determine if they continue to improve to meet success criteria). The improvement on untreated areas in more recent years may be from mini-white rain events that some local individuals in a Chino working group have observed since the large white rain event in 2008. The possibility of doing more harm than good is of concern given the large uncertainty in

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[34] The top 2 to 3 inches were removed of the golf course (Arcadis 2014), which may have set this fair rangeland area back to an earlier successional stage, but the vegetation was not surveyed before removal to evaluate changes. The site was seeded, however, and showed less annual weedy dominance and more perennial grasses than the unseeded amendment plots.

the outcome of the amendment study and known length of time it takes for vegetative succession in arid areas to recover the community from disturbance (**Appendix B-3**). If topsoil is lost, the area may never recover to original levels in fair rangeland areas.

7.9 Effect of Climate on Results

In arid environments, climate can have an effect on vegetation growth or cover and to a lesser extent on species richness, particularly of annual species (Yan et al. 2015, Zhang et al. 2016). Plant communities in arid areas tend to be somewhat resistant to droughts (Miranda et al. 2011), but the climatic variation creates some uncertainty in the amendment results. Though vegetation trends in the amendment plots were interpreted relative to changes in the adjacent reference plot to reduce climatic influences on the results (both are subject to same climate), climate could interact with the treatment in a way that creates larger changes in wet periods than dry periods. Possible climatic interactions are described below by first identifying climatic trends during the study, and second, identifying correlations between climate and vegetation parameters.

Based on Hurley records, **Figure 16** displays the average annual temperature and precipitation during the monsoon months of July, August, and September, when most vegetation growth occurs. Because the temperature trend appears to vary inversely with the monsoon precipitation (rainfall), precipitation trends can represent the climatic influences, especially given the area is an arid semi-desert with water limitations for plant growth.

Figure 17 overlays precipitation trends during the 3 months before each sampling period on the trend of the non-woody vegetation cover. Of the vegetation parameters, non-woody cover percentages exhibited the best correlation to precipitation. This figure shows that the non-woody cover in the pairs of East, North, and West plots was strongly affected by the precipitation pattern, and the Northeast plots were less influenced (**Figure 17**). In particular, the East and North plots most closely paralleled climatic trends, likely because they had the highest proportion of cover in herbaceous vegetation (**Figure 10**). Woody vegetation is less responsive to rainfall than herbaceous plants, and herbaceous annual species are the most responsive (Miranda et al. 2011). Seasonal weather patterns also influenced the vegetation results. The spring sampling periods (March 2008, April 2010) exhibited consistently lower percent cover of herbaceous plants than the fall growing seasons due to senescence of leaves and shoots in the dry early spring. In contrast to the strong effects observed on non-woody cover, climatic or seasonal changes did not have an obvious effect on richness or other diversity measures.

The changes due to precipitation can create uncertainty in the interpretation of the vegetation cover results in two ways. First, the amount of precipitation can change the magnitude of the difference between the treated and reference plots. The control West plots were not treated, and as such, could be evaluated to determine if meteorological conditions alone were expanding the inherent difference in non-woody cover between the two plots more in the rainy fall than in the drier spring. The answer was “no” when all autumn periods were compared to spring 2008, but “yes” when compared to spring 2010, when the difference was much smaller than in the fall (**Figure 10**). Fortunately, spring 2008 was the pre-treatment period being compared to fall 2013 in **Tables 16a** and **16b** to detect treatment effects, and as such, no strong bias from precipitation differences is expected.

The second way precipitation can influence results is by creating large variability in the vegetation community data, making interpretations uncertain (particularly for vegetative cover in North and East amendment plots, see **Table 16a**). For example, the East amendment plot percent cover increases from amendments and tilling only when the anomalous spring 2010 estimate is ignored. After tilling and amendment application, the East plot became dominated by non-woody, herbaceous vegetation that decreased greatly during the dry season in spring, a trend that did not occur during spring 2008 when woody vegetation dominated. The spring 2008 community represented the community that grew during the growing monsoon season in 2007 and represented the pre-white rain condition. The low precipitation in spring 2010, with its loss of woody vegetation, created variability in the dataset that had to be removed to properly interpret effects.

Precipitation patterns can also affect species composition. Including precipitation and season in the CCA (**Figure 13c**) did not considerably change the CCA or conclusions on species composition (compare to **Figure 13b**). However, the wetter years appear to be influencing vegetation composition more than drier years, with more cover by annual and perennial forb species during wet years. **Figure 16** shows that 2011 and 2012 were drought years. During these 2 years, vegetation was not sampled, though photographs were taken (**Appendix D**). Because these 2 years were missed, the CCA does not fully capture precipitation effects on herbaceous species composition.

The similarity in non-woody cover before and after the drought support that the drought during those years did not have a large effect on non-woody cover once rainfall returned to normal. However, annual herbaceous plants increased in abundance during the wet year of 2013, consistent with other studies in arid environments (Yan et al. 2015). The annual forb (carelessweed) invaded in abundance during the wet year of 2013, particularly in the North amendment plot, possibly because of the drought in the 2 years prior, creating more barren locations for such weeds to invade. In the photolog (**Appendix D**), the 2011 photos of the North amendment plot show a much more barren area than in 2010, which is not very noticeable in the other plots, whether they are reference or amendment plots. Tilling fair rangeland in the North plot may have made it more susceptible to losing cover during drought and being invaded by annual weeds when the drought ended. This may not have been observed in the East amendment plot because it already was mostly barren (mostly mesquite) and could only improve regardless of the weather conditions. Possibly the North amendment plot may have shown greater improvement if no drought had occurred. The vegetation is responding to confounding climatic factors that are difficult to tease apart, and as such, there is substantial uncertainty in the factors causing the trends observed.

Because no areas in the study were not subjected to the white rain, climatic effects were more difficult to separate when evaluating white rain effects alone on the plant community. To adjust for climatic effects, graphs (e.g., **Figures 9a** and **9b**) were evaluated qualitatively, comparing pre-white rain conditions in spring 2008 to the same season in 2010, after considering that the growing season for those dormant spring periods the fall before was drier for the 2010 than the 2008 community. If conclusions were the same with this comparison for the majority of the plots as when climate differences were ignored (which was the case), then the climate effects were assumed to not influence the results enough to be of concern.

7.10 Summary of Uncertainties

This study was not optimally designed to answer questions of interest for the FS. The decisions for the FS will be better informed, however, using results from an uncertain study with adjustments and assumptions rather than having no information. Adjustments and assumptions were made to use this long-term dataset, which encompasses the years 2006 to 2013.

The adjustments to the soil chemistry data included adjusting the data to represent sieved data for years when not sieved, deleting SPLP data with 1:20 dilution ratio (only those with 1:5 ratio retained), using post-white rain copper soil data in May 2008 (or 2010 for west plots) to represent pre-white rain soil copper in 2006 (assuming that white rain did not change copper concentrations), using less collocated data to evaluate if changes were different from regional trends in the early years, and using an equation to calculate pCu.

For tissue data, the adjustments were an unwashed to washed adjustment applied to 2008 data and a dormancy bias adjustment for that year. ERA data in a bioaccumulation model were used to develop the dormancy bias, and uncertainty exists as to their representativeness for the soil to plant bioaccumulation regression expected on the amendment plots. The ERA data with pH < 5.5 were included on **Figure 6** as a comparison, but again, uncertainty exists as to the appropriateness of using ERA data for this comparison. Locations with soil having pH < 5.5 generally responded to the white rain in a way similar to that of the amendment plots, and for this reason, only those ERA plots were included.

Additionally, plant tissue data were not collected in reference plots in the pre-treatment period, nor were they collected again until the end of 5 years. Treatment effects had to be restricted to comparisons of amended and reference plots in the last year, assuming there were no plant concentration differences between plots before treatment.

Plant community data were collected on the reference plot before the white rain and periodically thereafter, but were not replicated on the reference plot (n =1), which meant that no statistical analysis was possible. These adjustments and data gaps make the results and conclusions of this report uncertain. Additionally, the three remedies (lime, organic matter, tilling) were not separated, which confounds decisions about whether some components of the treatments should be included or excluded for remediation. Chino drew from information from other studies (white rain report, phytotoxicity and community study), anecdotal information (haul road ripping), and literature to assist in providing additional information that can help separate out the effectiveness of the three treatments (lime, tilling, and organic matter), as described in **Appendix B-21**. Final conclusions are drawn from this study with the understanding of the high uncertainty in the results due to the adjustments required to work around the various data gaps.

8. Evaluation of Remedial Technologies Separately

Appendix B-21 discusses the effectiveness of each remedial technology separately in changing the primary metrics of pCu, copper uptake, cover, richness, and species composition (successional stage and grass proportions) if such information is available for each metric. Information from the sitewide ERA (Newfields 2005), white rain report (Arcadis 2017b), phytotoxicity and community study (Arcadis 2017b), and haul road ripping project were reviewed to develop the conclusions and recommendations in **Table 18** for liming, tilling, and organic matter applied separately in three categories:

1. Poor rangeland with rocky soils in relatively level areas (< 6% slope on topographic maps, see **Figure C-2-2)**
2. Fair to good quality rangeland with granular soils in relatively level areas
3. Fair to good quality rangeland on steeper slopes.

Category 1 is represented by the East location, Category 2 by the North and West locations, and Category 3 by the Northeast location.

The assessment revealed that liming alone, as seen by the effect of the white rain on all three soil categories, can increase soil pH and pCu; decrease copper uptake into plants; and increase species richness and the proportion of cover in non-woody plants (also see main text). The increase in soil pH and pCu is smaller on the steep plot because of runoff. On all the plots, effects on cover, grass proportions, and successional stage appear to be at most minimal (**Table 18**).

Tilling has different effects, depending on whether it occurs in poor rangeland or fair to good rangeland areas (**Table 18**). Tilling in the eroded rocky soil type characterized as in poor rangeland condition increases grass cover to a much greater extent than lime alone. The grass species present after tilling include more late successional species over time than if the area is not tilled and only subjected to the white rain. However, tilling in fair rangeland reverses positive trends of the white rain and causes a reduction in diversity and percent in grass cover after 5 years. This reduction is not unexpected because a granular soil located in an area with fair rangeland condition does not need decompacting and would already have good grass growth, as long as low pCu was not too limiting. The North amendment plot had acidic soil with low pCu (estimated to be about 2.0) during the growing season before the white rain, yet grass species and plant diversity in the plot were lost after the treatment. The evidence supports that copper uptake in plant tissues is less of an impediment to a healthy grass and rangeland community for fair rangeland than disturbance that can set succession back to an earlier stage.

Organic matter may do more harm than good to rangeland and wildlife habitat. The literature supports that organic matter is often of little benefit when reclaiming soils, often decreases species richness, and increases invasion by annual weedy species. Some plots lost vegetative cover and all lost desirable grasses, possibly from the organic matter additions, though this is uncertain. What is certain is that desirable grasses returned in the tilled haul road without organic matter applied, and considerable amounts of organic matter (manure) were observed moving downhill off the steep plot, providing little benefit (**Table 18**).

Recommendations by soil category (categories shown on **Figure C-2-2)** are as follows:

1. Poor rangeland with rocky soils in relatively level areas (flat rocky):
   - Tilling is recommended in areas of depressed pCu, pending further evaluation in the FS.
2. Fair to good quality rangeland with granular soils in relatively level areas:
   - No remedy was effective in increasing cover of desirable species enough to improve wildlife habitat and livestock range. Therefore, none of these three remedies are recommended.
3. Fair to good quality rangeland on steeper slopes:
   - No remedy was effective in increasing cover of desirable species enough to improve wildlife habitat and livestock range. Therefore, none of these three remedies are recommended.

9. Conclusions and Recommendations

This Year 5 Monitoring Report presents the final results of the STSIU Amendment Study that evaluates the effectiveness of three remedial techniques: tilling, liming, and organic matter application. The effect of the natural white rain event and subsequent natural attenuation, the effect of tilling via haul road ripping, and results from other studies were considered together to develop the final conclusions and summary of recommendations herein.

This study first identified the primary metrics important for assessing success of a remedial technique and found the following:

- Soil pCu is the soil parameter most strongly correlated with plant uptake of copper and thus is a possible indicator of potential adverse effects on the plant community. It is a key primary metric to evaluate effectiveness of the different amendments, and its interpretation was supported by data on pH, total copper, TOC, and ABA analysis. Soil pCu has been used to assess the need for remediation when vegetation data are unavailable (e.g., the pCu STSIU pre-FS RAC), but vegetation community metrics are more important when evaluating remediation effectiveness.

- Soluble copper is not as useful an indicator of soil toxicity as pCu because it includes copper complexed with dissolved compounds that are not readily available to plants. Moreover, these compounds may increase with additions of organic matter, resulting in soluble copper increasing after remediation. Therefore, no target soluble copper criteria should be established for success.

- Copper uptake, as represented by copper concentrations in aboveground plant tissue, is a key parameter in determining exposure to plants in addition to the soil pCu. The soil pCu does not represent all bioavailable copper that may be taken up into a plant. The aboveground tissue concentrations, if high, indicate plant absorption of copper, which may have a toxic effect. However, copper may not translocate from the roots to shoots in some plants and evaluating both the soil pCu and tissue copper concentration metrics provides a more complete picture of exposure. Therefore, tissue copper was also considered an important primary metric along with soil pCu for assessing remediation success.

- The most ecologically relevant primary metrics are plant species richness and percent vegetative cover, two indicators of wildlife habitat and rangeland quality that need to be protected. An evaluation of species composition was used in conjunction with richness and cover to determine if the remediation improved the quality of the plant communities for wildlife and livestock after reducing copper uptake into plants. Notably, richness can increase with a few small plants of different species, and yet wildlife and livestock forage and cover may not improve enough in the area to make a difference in habitat quality if the new species are small and sparse. Therefore, improvement of total vegetative cover composed of desirable species (in particular perennial rangeland grasses) is the most ecologically important target.

The main conclusions from the Amendment Study are as follows:

- The white rain event, and subsequent natural attenuation, was effective at: (1) improving pCu in low soil pH areas (< 5.5) across the STSIU; (2) reducing bioavailability and plant uptake of Cu; and (3) improving plant community richness. It was particularly effective on the relatively level areas, whether poor or good rangeland. The pH monitoring program (Arcadis 2017a) evaluated the persistence of the improvement in pH and pCu from the white rain, and demonstrated that the improvement has been sustained after 5 years, consistent with the results of this study. Low pCu plots in the relatively level areas improved to pCu above 5 or near 5. In areas exhibiting continual improvement in pCu, monitoring natural attenuation is recommended as the best remedial technique. More years may be needed to statistically demonstrate if pCu is increasing in some areas. While the white rain event did not result in the establishment of plant species that are potentially toxic or of low value to wildlife or livestock, vegetation cover was not increased enough to show benefit to wildlife habitat or improved rangeland quality. Overall, lime alone does not appear to change the community enough to enact the plant community changes desired.

- While the white rain event was effective, the remedial technologies applied after the white rain were not as effective above and beyond the white rain effect. When all three technologies were combined (lime, organic matter, tilling) on the relatively level plots, pH was increased (with 90% confidence). However, the three technologies did not significantly improve soil pCu. Possibly the lack of significant change in pCu overall may have been due to high variability in pCu resulting from heterogeneity of the field soils, sampling error, analytical error, and using an equation to calculate pCu. In parallel with the insignificant change in pCu, reduction in copper uptake into plants from the three technologies combined also was minimal as the white rain was responsible for most of the reduction in the copper uptake. Tilled plots (to 8 inch depth) did not show improved pCu relative to untilled plots in the study. The effect of tilling deeper (to 12 to 18 inches) on the plant community was demonstrated by an example outside this specific study. A haul road traversing poor rangeland condition with no vegetation initially was tilled, and that action did result in high abundance of diverse grasses after 11 years. This example supports the concept that vegetation changes could be from decompacting the soil on the road. The finding on amendment plots of no clear benefit of all three treatments (in increasing pCu and decreasing uptake of copper in plants after the white rain) suggests that chemical changes from mixing are not the driver of the large community changes, but rather the tilling physically decompacts soil, allowing plants to re-establish on poor rangeland. In contrast, the fair rangeland on relatively level ground undergoing the same treatments did not increase in cover or richness and reversed succession toward an earlier seral stage with loss of grasses. The fair rangeland plot on steeper ground also experienced a setback in succession to an earlier stage with a loss of desirable grasses. Unlike the poor rangeland plot, these areas already had a diverse plant community and rangeland grasses present, even before the white rain, despite a low pCu of approximately 2 to 3 at that time. The benefit from decompacting soil by tilling is large and should be considered as a remedial technology. However, it is warranted only if erosion of surface soil resulting in a compacted or rocky surface was caused by a loss of the roots of a plant community impacted by pCu in the past, rather than from overgrazing.

- Organic matter, in combination with the other one or two technologies, did not improve pCu or reduce copper uptake significantly. Organic matter may have exacerbated annual weed invasion and slowed recovery after the plots were disturbed from tilling or amendment application. Unlike the white rain effect alone, the disturbance from tilling combined with the effect of applying amendments in the form of lime and organic matter increased undesirable annual weeds substantially (e.g., golden crownbeard, carelessweed), some of which are potentially toxic to livestock. Weeds increased less on the steep plot that was not tilled but also less on the haul road that was tilled, which suggests factors other than tilling may have increased invasion of undesirable weeds; however, organic matter may not be responsible because organic matter was applied at high amounts on the steeper plot with less weed invasion, and was not applied at all on the tilled haul road that also experienced less weed invasion. The plot with less invasion was steep and subject to runoff of the organic matter, which may explain why it experienced less invasion than the more level plots that were also subject to application of organic matter. The weed invasion may be short-term, as seen on the haul road that was tilled. However, after 8 years, the fair and poor rangeland plots on relatively level ground still support a fair amount of potentially toxic annual weed species. Organic matter added to soils for reclamation rarely have been shown to be beneficial in arid or semi-arid areas.

- The three remedial technologies at the levels evaluated in this pilot study are not viable for increasing pCu in steeper areas ($\geq$ 13% slope). Tilling is not a feasible method for slopes too steep or too rough (high amount of boulders) for the equipment. It is also not feasible for bedrock areas. Liming and organic matter application were not effective at increasing pCu on steeper areas, which generally are in fair rangeland condition in the STSIU. Even the lime in the white rain had only a small effect on pCu on the steeper areas.

- The results support the following recommendations:

  - Liming and tilling is only recommended in relatively flat, poor rangeland rocky areas where phytotoxicity from copper can be demonstrated. Tilling alone has been shown to be effective, and should be tried first at an 8-inch depth and deeper to evaluate the proper depth.

  - Organic matter application is not recommended.

In summary, the white rain increased pH and pCu significantly and reduced copper uptake into the plants of all the plots. As a result, the treatments added to the soil in the plots provided minimal if any additional benefit in further reducing copper impacts to the plant community because the white rain already significantly improved the soil chemistry. The white rain increased plant species richness, but had a small effect on total plant cover that is required to benefit wildlife and livestock. The tilling and mixing of lime amendments into the soil tended to increase pH but degraded the plant community on the fair rangeland plot and improved the plant community on the poor rangeland plot. Recovery of degraded conditions could take decades. The weight of evidence supports that, on plots such as the ones in this study with high copper (up to 2,900 mg/kg) and low to moderate pH after the white rain (as low as 3.9 in one year in steep sloped plot and as low as 5.7 to 5.9 in flatter plots), the treatments applied will likely produce no easily discernible benefit in terms of reducing current phytotoxicity. The benefit of remediation likely will be greatest in decompacting soils that may have been eroded and degraded long ago from smelter or tailings impacts that destroyed the historical plant community.

This pilot study is an initial assessment of the effectiveness of these three remedial techniques, and these conclusions and recommendations were considered in combination with findings from other relevant STSIU studies (Arcadis 2011a, 2014, 2017a, 2017b) to determine remedial actions that should be advanced to full-scale implementation via the FS. Guidelines for remediation of different soil categories on the STSIU from this assessment are based on obtaining a net environmental benefit and are as follows:

1. Poor rangeland with rocky soils in relatively level areas (flat rocky soils on **Figure C-2-2**) that are impacted by pCu:

    - Tilling is recommended in depressed pCu areas, pending further evaluation in the FS.

2. Fair to good quality rangeland with granular soils in relatively level areas (flat granular soils on **Figure C-2-2**)

    - Technologies evaluated in this study are not recommended.

3. Fair to good quality rangeland on steeper slopes ($\geq$ 13 percent):

    - Technologies evaluated in this study are not recommended.

As more information becomes available during the FS process, these recommendations may be revised, and should be considered preliminary.

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ARCADIS

Tables

Table 1
Chronology of Study Design Modifications and Implementation Showing Amendment Plot Specifications - Original and Revised

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Chronology of Study by Plot Location and Changes (changes are italicized)

Study Design in 2006 (finalized 2008) Study Plan									Pre-White Rain Sampling in 2006
Plot	**Baseline Conditions - Pre-white rain**			**Plot Amendments Originally Planned**				**Installation Date**	Baseline pH, TOC, and C:N ratio sampled in July 2006 No reference plots sampled
	Slope (aspect)	**Rangeland Condition in 1997**[1]	**Baseline pH/pCu 2006**[2]	**Date Planned of Amendment**	**Lime Slurry Application Rate** (t/ac as $CaCO_3$)	**OM Addition/ Rate** (t/ac)	**Application Method**		
West	6% (SE)	Fair-Good	6.49/5.06	June 2008	2	none	Spray Only	July 2006	White rain event in January 2008 changed design
North	6% (E)	Fair	3.69/2.04	June 2008	6.6	10	Spray and Till	July 2006	
Northeast	52% (S)	Fair	5.41/3.26	June 2008	2.5	none	Spray Only	July 2006	
East	5% (E)	Poor	4.55/3.5	June 2008	6.6	20	Spray and Till	July 2006	

Study Design Revised in March 2008 after January 2008 White Rain									Post-white Rain and Post-Amendment Sampling
Plot	**Baseline Conditions - Post-white rain**			**Plot Amendments Planned after White Rain**				**Installation Date**	Baseline soil chemistry (pH, Cu, SPLP Cu, TOC, C:N, Ca, K, NH_4^+, TKN, NO_3^-/NO_2^-) sampled and analyzed in lab in early May 2008 except Cu in West plot (n = 2 each) Baseline field paste pH of soil sampled in 4 plots in late May/early June 2008 (n = 10 each)
	Slope (aspect)	**Rangeland Condition in 1997**[1]	**Baseline pH/pCu 2008**[2]	**Date of Amendment**	**Lime Application Rate** (t/ac as $CaCO_3$)	**OM Addition/ Rate** (t/ac)	**Application Method**		
West (control)	6% (SE)	Fair-Good	*8.16/5.91* [3]	NA (became a control)	*none*	*none*	*NA*	July 2006	All four amendment plots sampled for soil chemistry (pH, Cu, SPLP Cu, TOC, C:N, Ca, K, NH4+, TKN, NO3-/NO2-) post-amendment semi-annually, starting December 2008 extending to October 2013. Acid Base Accounting (ABA) conducted once in December 2008
North (Baseline Amendment Plot, Post-amendment Plot[4])	6%, *8%* (E)	Fair	*6.61/4.31*	*6/17/2008*	*1.3*	*24*	Spray and Till	July 2006, June 17, *2008*	
Northeast (Baseline Amendment Plot, Post-amendment Plot)	52%,*14%* (S)	Fair	*5.92/3.50*	*6/18/2008*	*1.3*	*72*	Spray Only	July 2006, May *2008*	Baseline vegetation community parameters (non-CCP methods) and tissue sampled in the four amendment plots in March 2008. Vegetation community parameters (non-CCP methods) sampled post-amendment on these four amendment plots in December 2008, and in October 2009, April 2010, October 2010, October 2013. Tissue sampled post-amendment only in Fall 2013. CCP methods added to non-CCP methods of sampling in fall 2010 and fall 2013.
East	5% (E)	Poor	*5.68/4.61*	*6/17/2008*	*1.3*	*47*	Spray and Till	July 2006	

Study Design Revised in March 2008 after January 2008 White Rain -- by adding Reference Plots									Post-white Rain and Post-Amendment Sampling
Plot	**Baseline Conditions - Post-white rain**			**Plot Amendments Planned and Implemented after White Rain**				**Installation Date**	Baseline Vegetation community parameters sampled on reference plots in March 2008 in dormant season (thus representing pre-white rain community growth). Vegetation sampled post-amendment on reference plots in December 2008 for all four plots, and in October 2008, April 2010, October 2010, October 2013 for all plots. Tissue sampled in October 2013. No CCP methods used on reference plots.
	Slope (aspect)	**Rangeland Condition in 1997**[1]	**Baseline pH/pCu 2008**[2]	**Date of Amendment**	**Lime Application Rate** (Tons/acre as $CaCO_3$)	**OM Addition/ Rate** (Tons/acre)	**Application Method**		
West Reference (control)	*6% (SE)*	Fair-Good	*8.05/6.07* [3]	NA	none	none	NA	*March 2008*	
North Reference (Baseline Plot, Post-amendment Plot)	*12%, 13% (E)*	Fair	*5.88/4.43* [3]	NA	*none*	*none*	*NA*	*March 2008/ mid-June 2008*	Baseline field paste pH of soil sampled in late May/June 2008 (n = 10 each)
Northeast Reference (Baseline Plot, Post-amendment Plot)	*50%, 28% (S)*	Fair	*5.50/3.41*	NA	*none*	*none*	*NA*	*March 2008/ May 2008*	
East Reference	*4% (E)*	Poor	*4.92/3.59* [3]	NA	*none*	*none*	*NA*	*March 2008*	ABA, soil analytes other than pH, aand plant tissue not sampled on reference plots during post-white rain baseline period so unavailable for 2008 baseline.

Table 1
Chronology of Study Design Modifications and Implementation Showing Amendment Plot Specifications - Original and Revised

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Reference Plots Redefined in 2010 to Include all Soil Chemistry Sampling									Post-Amendment Sampling Only
Plot	**Conditions of Installed Soil Reference Plots**			**Plot Amendments Applied**					Soil chemistry sampled for lab analysis (pH, Cu, SPLP Cu, TOC, C:N, Ca, K, NH4+, TKN, NO3-/NO2-) on reference plots semi-annually from April 2010 to October 2013 (in post amendment period). ABA also conducted annually from 2010 to 2013 (part of pH monitoring program).
	Slope (aspect)	**Condition in 1997[1]**	**First Post-Amendment pH/pCu April 2010**	**Date of Amendment**	**Lime Application Rate** (t/ac as $CaCO_3$)	**OM Addition/ Rate** (t/ac)	**Application Method**	**Installation Date**	
West Reference (control)	6% (SE)	Fair-Good	*8.03/7.73*	NA	none	none	NA	April 2010	
North Reference	13% (E)	Fair	*5.26/4.35*	NA	none	none	NA	April 2010	
Northeast Reference	28% (S)	Fair	*5.76/4.87*	NA	none	none	NA	April 2010	
East Reference	4% (E)	Poor	*4.16/3.23*	NA	none	none	NA	April 2010	

Notes:

1 - Preliminary rangeland condition from Woodward Clyde (1997). Observed apparent trend (OAT) scores based on remote-sensing-based maps described in (ARCADIS 2011a) and field estimate of West plot had similar ratings of "good", "fair-good", "fair-good", and "poor" for West, North, Northeast, and East plots

2 - Unless stated otherwise, pH averaged over all available data (field and lab, n = 12), sieved or adjusted as if sieved to < 2 mm. pCu is calculated using lab pH data and total copper. pCu is often an estimate because Cu not sampled on plots in 2006, on reference plots, or in West plot in 2008 (see text for estimati

3 - pH for these plots was based on average of 10 field samples (see **Appendix A**), which were only data available for these plots in 2008.

4 - red indicates applies to moved plot (due to erosion problems for North and too steep slope for equipment for Northeast). Before being moved plot was baseline plot and after being moved is called post-amendment plot (Figure 2).

t/ac = tons per acre
pCu = cupric iron activity

OM = organic matter
$CaCO_3$ = calcium carbonate

NA = Not available

Table 2
Hypotheses Tested as Part of the Amendment Study Conceptual Model

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Hypothesis	Outcome
Effects of White Rain on Soil Chemistry and Plant Uptake of Copper	
Soil pH and pCu will increase, soluble copper will decrease, and plant tissue copper concentrations will decrease on amendment and reference plots as a result of the white rain that occurred in January 2008, and the effect will persist.	Supported: Results suggest that the white rain event that limed areas increased pH and pCu and decreased plant tissue copper concentration. The pCu increase has persisted. Not Supported: There is not sufficient evidence to support a reduction in soluble copper due to the white rain event.
Effects of Remedial Technologies on Soil Chemistry (7 hypotheses)	
No. 1: Amendment using lime (at 1.3 tons/acre for the North, Northeast, and East plots) with or without tilling will increase pH and the increase will persist and exceed the target pH of 5.5.	Partially Supported: Results suggest that lime and tilling, combined with white rain, increased pH initially to above target levels and that the increase has persisted. Lime added after the white rain did not increase pH in the steep-sloped, untilled plot.
No. 2: Tilling will decrease total copper in surface soil and the decrease will persist, whereas lime and organic matter will not affect total copper because copper will remain in the surface soils.	Supported: Results suggest that the application of lime and organic matter did not change concentrations of total copper. Not Supported: Evidence does not support a reduction in total copper due to tilling to 8 inch depth.
No. 3: Amendment of lime/organic matter and/or tilling will increase pCu, and this increase will persist and show benefit relative to untreated plots.	Increase Not Supported: Soil pCu did not significantly increase in the amended and tilled plots. Though means were higher in the tilled plots, statistical power to detect significant differences was low. Benefit is Not Supported: Though persistent over the five years, the insignficant increase in pCu in the amended, tilled plots relative to the reference plot in the poor rangeland plot is diminishing, rather than being sustained over time because the reference plot pCu is increasing. Not Supported: Evidence is insufficient to support an increase in pCu due to the application of lime and organic matter alone beyond the effects of the liming from the white rain. Soil pCu did not increase on a steep slope area (14% slope) treated only with organic matter and additional lime.
No. 4: Amendment of lime, organic matter, and tilling will decrease soluble copper and the decrease will persist.	Not Supported: Soluble copper increased significantly just after application of the remedial technologies, though the increase likely is part of large fluctuations observed through time.
No. 5: Amendment of organic matter will increase TOC percentage and decrease C:N ratio; these changes will persist, meeting the target of 1% TOC and C:N of less than 20:1, preferably between 8:1 and 15:1.	Supported: Results suggest that organic matter amendments increased TOC and decreased C:N ratio to target levels, though the East amendment plot decreased C:N ratio to slightly below the target threshold of 8:1. The changes persisted.
Effects of Changes in Soil Chemistry on Vegetation	
No. 6: The increase in pCu from lime/organic matter and tilling will reduce uptake of copper into plant tissue.	Not Clearly Supported: Soil pCu did not significantly increase from amendments and/or tilling beyond the white rain, and uptake correspondingly did not decrease much, if at all, beyond hte decrease resulting from the white rain. Though copper in the plants decreased to non-toxic levels, particularly in herbaceous vegetation (13 mg/kg, Figure 6, Table 7), most, if not all of the decrease, was probably from the white rain. Not Supported. Application of organic matter and lime alone did not reduce copper in tissue.
No. 7: The reduced uptake of copper will increase canopy cover and richness. It will also increase evenness and overall diversity of the plant community by 2013, and will change the community composition.	Not Supported for Poor Rangeland: Though canopy cover, diversity, evenness and richness increased on the poor rangeland area and the relative cover of the rangeland grasses increased (Table 16a,b and Figure 9a,b), little support exists for the assumption of a significant reduced uptake of copper or increased pCu causing the changes. Therefore plant community changes are likely due to physical (decompacting) changes, rather than chemical changes from the treatments. Not Supported for Fair Rangeland: Canopy cover and richness did not increase on the fair rangeland area with tilling and amendments (Figure 9a,b, Table 16 a,b). Evenness (Table 16a) or rangeland grasses (Table 16b) were reduced on all fair rangeland plots, and changes were likely independent of chemical changes, but rather a result of setting back vegetative succession to an earlier stage.

Notes:

C:N = carbon:nitrogen ratio

pCu = cupric iron activity

TOC = total organic carbon

Table 3
Closure/Closeout Plan (CCP) Reclamation Guidelines

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

CCP Performance Criteria after ~12 Years	Minimum Cover[1]	# Species
Total Canopy Cover (%)	38%	---
Shrub Density (shrubs/m^2)	0.5	---
Perennial Warm Season Grass Cover (%)	1.0%	3
Perennial Cool Season Grass Cover (%)[2]	0.5%	1
Perennial Shrub (%)	1.0%	2
Forbs (%)[3]	0.1%	1
Number of Species (total)	---	8

Notes:

1 - Minimum cover is the cover level of the individual species with the least amount of cover.

2 - For the purposes of this guideline, intermediate-season grasses, like plains lovegrass (*Eragrostis intermedia*), were considered the functional equivalent of the more traditionally defined cool season grasses.

3 -The forb guideline was unqualified with respect to seasonality and could include a perennial, biannual, or annual species.

CCP = Closure/Closeout Plan

m^2 = square meters

Table 4
Mean Surface (0 - 6 inches bgs) Soil Results for Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	Mean pH[1] (s.u.)	Average Copper[1] (mg/kg)	Total Organic Carbon (%)	Mean Soluble (SPLP) Copper[2] (mg/L)	pCu	Mean Carbon : Nitrogen Ratio (X:1)
Northeast Amendment Plot - Lime (1.3 t/ac) and Organic Matter (72 t/ac) Only[3]							
Jul-06	1	5.41	-	0.70	-	-	22
May-08	2/12	5.65/5.92[4]	2767	1.40	0.16	3.50	19
Dec-08	2	3.94	2462	1.15	9.65	2.04	16
Oct-09	3	5.42	2802	1.41	3.71	3.38	9
Apr-10	3	5.68	1456	1.21	0.26	4.37	12
Oct-10	2	5.50	1851	1.01	3.41	3.86	15
May-11	3	6.17	1890	2.18	0.56	4.64	15
Oct-11	3	5.57	2803	1.63	0.23	3.42	12
Apr-12	8/3[5]	5.19	2408	1.37	0.61	3.27	10
Oct-12	8/3[5]	5.64	2491	1.53	0.47	3.66	9
Apr-13	8/3[5]	5.86	2886	2.13	0.58	3.67	9
Oct-13	8/3[5]	5.70	2453	1.83	7.42	3.72	12
Northeast Reference Plot							
May-08	10	5.50	--	--	--	--	--
Apr-10	1	5.76	903	1.03	0.08	4.87	28
Oct-10	2	4.90	3423	1.34	2.80	2.66	14
May-11	2	4.58	2805	2.92	13.20	2.47	21
Oct-11	2	4.60	3235	1.30	3.25	2.36	10
Apr-12	8/3[5]	4.75	2606	1.20	0.48	2.73	11
Oct-12	8/3[5]	5.49	2268	1.65	0.36	3.66	23
Apr-13	8/3[5]	4.99	3039	1.50	0.92	2.78	7
Oct-13	8/3[5]	5.35	2023	1.10	8.65	3.62	10
East Amendment Plot - Lime (t/ac) and Organic Matter (48 t/ac) with Tilling							
July-06[6]	4	4.55	--	1.15	--	--	16
May-08	2/12	5.68/5.68[4]	1118	0.71	0.10	4.61	17
Dec-08	2	6.24	1019	1.30	0.31	5.22	18
Oct-09	3	7.25	798	1.50	0.26	6.49	9
Apr-10	3	7.24	892	1.52	0.30	6.31	10
Oct-10	2	6.28	1281	1.34	0.44	4.95	11
May-11	3	7.53	955	3.15	0.32	6.48	13
Oct-11	3	6.20	868	1.13	0.11	5.39	12
Apr-12	8/3[5]	7.18	790	1.27	0.42	6.49	8
Oct-12	8/3[5]	7.51	702	1.80	0.20	6.84	10
Apr-13	8/3[5]	6.41	805	1.10	0.39	5.73	7
Oct-13	8/3[5]	7.04	857	1.50	0.17	6.14	7
East Reference Plot							
May-08	10	4.92	--	--	--	--	--
Apr-10	1	4.16	1032	0.81	3.71	3.23	11
Oct-10	2	4.57	1243	0.81	6.22	3.40	11
May-11	2	4.87	1325	0.91	2.27	3.61	14
Oct-11	2	4.70	1320	0.65	0.23	3.45	11
Apr-12	8/3[5]	5.65	1205	0.60	0.14	4.46	10
Oct-12	8/3[5]	6.56	1187	0.85	0.19	5.32	13
Apr-13	8/3[5]	5.61	1100	0.75	0.24	4.52	9
Oct-13	8/3[5]	5.95	1100	0.65	1.12	4.86	9

Table 4
Mean Surface (0 - 6 inches bgs) Soil Results for Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	Mean pH[1] (s.u.)	Average Copper[1] (mg/kg)	Total Organic Carbon (%)	Mean Soluble (SPLP) Copper[2] (mg/L)	pCu	Mean Carbon : Nitrogen Ratio (X:1)
North Amendment Plot - Lime (1.3 t/ac) and Organic Matter (24 t/ac) with Tilling [3]							
Jul-06	2	3.69	--	1.16	--	--	15
May-08	2/12	6.03/6.61[4]	1982	1.25	0.26	4.31	23
Dec-08	3	6.59	1779	1.95	0.77	5.04	23
Oct-09	3	6.11	1519	1.59	0.24	4.65	12
Apr-10	3	6.68	1042	1.23	0.17	5.65	11
Oct-10	2	6.57	873	0.98	0.08	5.73	18
May-11	3	5.89	1617	1.96	0.53	4.44	17
Oct-11	3	5.70	1463	1.43	0.22	4.35	9
Apr-12	8/3[5]	6.71	919	1.37	0.33	5.96	11
Oct-12	8/3[5]	7.19	1136	1.90	0.29	6.08	10
Apr-13	8/3[5]	6.75	864	1.33	0.35	5.94	10
Oct-13	8/3[5]	6.18	972	1.17	0.59	5.43	14
North Reference Plot							
May-08	10	5.88	--	--	--	--	--
Apr-10	1	5.26	946	0.82	0.55	4.35	24
Oct-10	2	5.56	1280	0.73	0.69	4.29	28
May-11	2	5.72	1195	0.86	0.91	4.55	11
Oct-11	2	5.75	861	1.25	0.07	4.92	12
Apr-12	8/3[5]	5.74	1110	0.85	0.20	4.88	15
Oct-12	8/3[5]	6.04	1069	0.60	0.24	5.04	26
Apr-13	8/3[5]	6.23	503	0.95	0.06	6.21	11
Oct-13	8/3[5]	5.79	760	0.85	0.39	5.17	9
West Amendment Plot - Control							
Jul-06	2	6.49	--	1.91	--	--	24
May-08	10	8.16	--	--	--	--	--
Dec-08	2	7.39/8.16[4]	1379	1.10	0.02	5.91	29
Oct-09	3	7.56	1029	0.95	0.04	6.48	9
Apr-10	3	7.71	691	1.13	<0.01	7.01	10
Oct-10	2	8.28	1066	1.09	0.02	7.03	11
May-11	3	7.54	2260	1.71	0.09	5.60	21
Oct-11	3	7.77	1360	1.60	0.04	6.43	11
Apr-12	8/3[5]	7.53	2129	1.30	0.20	5.63	16
Oct-12	8/3[5]	7.58	1815	1.10	0.07	5.88	11
Apr-13	8/3[5]	7.43	2174	1.10	0.17	5.45	11
Oct-13	8/3[5]	7.68	1767	1.13	0.03	5.96	10

Table 4
Mean Surface (0 - 6 inches bgs) Soil Results for Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	Mean pH[1] (s.u.)	Average Copper[1] (mg/kg)	Total Organic Carbon (%)	Mean Soluble (SPLP) Copper[2] (mg/L)	pCu	Mean Carbon : Nitrogen Ratio (X:1)
West Reference Plot							
May-08	10	8.05	--	--	--	--	--
Apr-10	1	8.03	474	1.21	<0.01	7.73	10
Oct-10	2	8.48	1135	1.40	0.01	7.15	16
Oct-11	2	7.80	711	1.55	0.03	7.04	14
Apr-12	8/3[5]	7.64	1812	1.25	0.18	6.18	15
Oct-12	8/3[5]	8.03	1113	1.20	0.03	6.86	10
Apr-13	8/3[5]	7.69	1441	1.05	0.06	6.19	11
Oct-13	8/3[5]	7.64	1021	1.15	0.03	6.53	12

Notes:

1- All pH and total copper sample measured between 2006 and 2010 were not sieved but are adjusted to sieved (< 2 mm) concentrations using regression (see text). 2011 to 2013 data were sieved to < 2mm in laboratory.

2 - All SPLP Cu analyzed using modified 5:1 ratio with $CaCl_2$, except October 2011 to April 2013 used standard 1:20 ratio with DI water.

3- 2006 for Northeast and 2006 and Spring 2008 for North samples were collected from slightly different locations than December 2008 to 2012.

4 - Number before slash is pH averaged on two lab samples; number after slash is pH averaged on 12 samples (10 field paste pH and two lab samples). The exception is West amendment plot, where number is mean of field paste pH data for May 2008 (n=10) because no lab data were collected in May 2008.

5 - Eight samples were analyzed for pH, copper, and soluble copper by SPLP while three of the eight samples were analyzed for the full suite of constituents.
6 - Weighted average 0-1" and 2-4" samples to represent each 0-4" sample (depths are given in Appendix A, Table A-3).
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
SPLP - Synthetic Precipitation Leaching Procedure
s.u. - standard units

pCu = cupric iron activity

-- = not applicable

Table 5
Vegetation Cover Daubenmire Class Midpoints

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Percent Cover Range	Cover Class Midpoint[1]
< 1	0.5
1 – 5	3.0
6 – 15	10.5
16 – 25	20.5
26 – 50	38.0
51 – 75	63.0
76 – 90	85.5
> 95	98.0

Notes:

1 - Cover classes based on Daubenmire (1959) and modified to split 5-25% class into two classes.

Table 6

Mean Differences[1] in Surface Soil Results for Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	pH Treated minus Reference	Cu Treated minus Reference	SPLP Cu Treated minus Reference	pCu Treated minus Reference	TOC Treated minus Reference	C:N Treated minus Reference
Northeast - Amendment Plot (Lime and Organic Matter Only) and Reference Plot							
Apr-10	3	-0.08	553	0.18	-0.50	0.18	-15.6
Oct-10	2	0.60	-1572	0.61	1.20	-0.34	1.1
May-11	3	1.60	-915	-12.64	2.17	-0.74	-6.2
Oct-11	3	0.97	-432	-3.02	1.06	0.33	2.0
Apr-12	8	0.44	-198	0.12	0.54	0.17	-1.9
Oct-12	8	0.15	224	0.11	0.00	-0.12	-13.7
Apr-13	8	0.87	-153	-0.34	0.89	0.63	2.0
Oct-13	8	0.35	430	-1.23	0.11	0.73	2.1
Average		**0.61**	**-390**	**-2.44**	**0.74**	**0.11**	**-3.8**
East - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot							
Apr-10	3	3.08	-141	-3.41	3.08	0.71	-0.9
Oct-10	2	1.71	37	-5.78	1.56	0.53	-0.2
May-11	3	2.66	-370	-1.95	2.88	2.24	-0.5
Oct-11	3	1.50	-452	-0.12	1.94	0.48	1.8
Apr-12	8	1.53	-414	0.29	2.03	0.67	-2.6
Oct-12	8	0.95	-485	0.02	1.51	0.95	-3.5
Apr-13	8	0.80	-295	0.15	1.21	0.35	-1.7
Oct-13	8	1.09	-243	0.00	1.28	0.85	-1.6
Average		**1.90**	**-304**	**-1.83**	**2.17**	**0.85**	**-1.2**
North - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot							
Apr-10	3	1.42	96	-0.38	1.29	0.41	-13.4
Oct-10	2	1.01	-407	-0.61	1.44	0.25	-9.3
May-11	3	0.17	422	-0.38	-0.11	1.10	5.6
Oct-11	3	-0.05	602	0.15	-0.57	0.18	-2.4
Apr-12	8	0.98	-192	0.13	1.08	0.52	-3.9
Oct-12	8	1.15	67	0.05	1.04	1.30	-15.2
Apr-13	8	0.52	360	0.29	-0.27	0.38	-0.7
Oct-13	8	0.39	212	0.20	0.25	0.32	4.2
Average		**0.78**	**98**	**-0.17**	**0.70**	**0.56**	**-4.4**
West - Amendment Plot (Control, No Treatment) and Reference Plot							
Apr-10	3	-0.32	216	0.00	-0.72	-0.08	0.7
Oct-10	2	-0.20	-70	0.01	-0.12	-0.31	-4.6
Oct-11	3	-0.03	650	0.02	-0.61	0.05	-3.4
Apr-12	8	-0.11	317	0.01	-0.55	0.05	0.4
Oct-12	8	-0.45	702	0.04	-0.98	-0.10	0.7
Apr-13	8	-0.26	733	0.11	-0.74	0.05	0.0
Oct-13	8	0.04	745	0.00	-0.57	-0.02	-1.5
Average		**-0.22**	**363**	**0.02**	**-0.60**	**-0.05**	**-1.1**

Notes:

1 - Positive values = Average amendment plot results are lower than the average reference plot results; see **Table 5** for additional sample information.

C:N = carbon:nitrogen

SPLP = Synthetic Precipitation Leaching Procedure

Cu = copper

TOC = total organic carbon

pCu = cupric iron activity

Table 7
Summary of Statistical Analyses of Copper in Plant Tissue using one-tailed 2 sample t-test
Year 5 Amendment Study Monitoring Report

Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Comparison	Mean Tissue Concentration (A) (mg/kg)	Mean Tissue Concentration (B) (mg/kg)	Sample Sizes n_A, n_B	Statistical Parameter	P-value	Difference (mg/kg)	Decrease from treatment effect beyond white rain (mg/kg)[2]
White Rain Effect on Copper Concentration in Tissue							
Comparison in Time (adjusted for washing, dormancy)							
North, East, and Northeast plots only : (A) Tissue Cu 2008 (amendment plots) vs. (B) Tissue Cu 2013 reference1	83	33	8, 9	t = 2.80	**0.0152**	50	--
Same as above row but with no mesquite[1]	83	23	8, 6	t = 3.23	**0.0068**	60	--
North and East plots only : (A) Tissue Cu 2008 (amendment plots) vs. (B) Tissue Cu 2013 reference1	68	32	7, 6	t = 2.37	**0.0189**	36	--
Same as above row but with no mesquite[1]	68	20	7, 4	t = 3.74	**0.0037**	47	--
West plots only: (A) Tissue Cu 2008 vs. (B) Tissue Cu 20131	69	25	5, 5	t = 2.51	**0.0294**	44	--
White Rain plus Treatment Effect on Copper Concentration in Tissue							
Comparison in Time (adjusted for washing, dormancy, or unadjusted)							
North, East, Northeast Amendment Plots only: (A) Tissue Cu 2008 vs. (B) Tissue Cu 20131	83	23	8, 11	t = 3.11	**0.0071**	59	9
Same as above row but with no mesquite[1]	83	16	8, 8	t = 3.57	**0.0041**	66	7
East and North Amendment Plots only: (A) Tissue Cu 2008 vs. (B) Tissue Cu 20131	68	20	7, 8	t = 3.69	**0.0033**	48	12
Same as above row but with no mesquite[1]	68	13	7, 6	t = 4.36	**0.0019**	54	7
Comparison in Space (washed data)							
East, Northeast, and North Plots only: (A) Reference 2013 vs. (B) Amendment 2013	33	23	11, 9	t = -1.22	0.1195	--	9
Same as above row but with no mesquite[1]	23	16	6, 8	t = -1.54	*0.0747*	--	7
East and North Plots only: (A) Reference 2013 vs. (B) Amendment 2013	32	20	6, 8	t = -1.25	0.1244	--	12
Same as above row but with no mesquite[1]	20	13	4, 6	t = -1.57	*0.0870*	--	7'[3]
Northeast Amendment Plot only: (A) Reference 2013 vs. (B) Amendment 2013	34	34	3, 3	t =- 0.011	0.2480	--	0
Same as above row but with no mesquite[1]	28	25	2, 2	t = -0.340	0.3919	--	3

Notes:

1 - 2008 data corrected for dormancy bias (35% decrease) and to represent washed tissue (multiply by 0.9282).

2 - subtracting the difference from the "white rain" from the difference from the "white rain plus treatments" is the increase beyond the white rain. It is the same as the difference between 2013 amendment and reference pl because the same 2008 pre-white rain plot is used to calculate the differences from it and each 2013 plot.

3 - More of this difference is attributed to the East plot (difference of 11 mg/kg) than to the North plot (difference of 3 mg/kg)

Bolded when P<0.05; italicized when P<0.10. When sample size for a group ≤ 6 (almost all comparisons in space), then alpha for significance = 0.10, rather than 0.05.

Table 8
Plant Tissue Copper Concentrations by Species in Amendment Study[1]

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species/Location[2]	March 2008	March 2008[3]	March 2008	October 2013			
	Pre-Amendment	Pre-Amendment (adjusted)	Pre-Amendment (adjusted)	Post-Amendment		Post-Amendment Reference	
	UNWASHED	UNWASHED	WASHED	WASHED	UNWASHED	WASHED	UNWASHED
Northeast - Amendment Plot (Lime and Organic Matter Only) and Reference Plot							
Honey mesquite				51.50	56.40	45.80	41.00
Sideoats grama	302.00	202.34	187.81	33.30	35.88	25.10	32.80
Vine mesquite				16.20	31.90	30.50	31.90
East - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot							
Golden crownbeard				22.40	21.20	29.70	32.80
Green bristlegrass				9.88	12.30	19.00	22.80
Honey mesquite				37.70	38.40	71.40	42.50
Sideoats grama				7.02	7.56		
Snakeweed	84.00	56.28	52.24				
Unknown Aster #1	122.00	81.74	75.87				
Vine mesquite	120.00	80.40	74.63	14.30	15.41		
North - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot							
Arizona three-awn	188.00	125.96	116.92				
Blue grama	126.00	84.42	78.36				
Honey mesquite				39.40	33.50	39.70	51.20
Sideoats grama	16.40	10.99	10.20	6.91	7.44	20.10	14.40
Vine mesquite	105.00	70.35	65.30	19.80	16.10	12.30	14.20
West - Amendment Plot (Control, No Treatment) and Reference Plot							
Arizona three-awn	223.00	149.41	138.68				
Blue grama	114.00	76.38	70.90				
Honey mesquite				41.10	45.00	53.70	49.10
Purple loco	108.00	72.36	67.16				
Red three-awn				17.50	49.40	37.20	40.08
Sideoats grama	45.10	30.22	28.05	8.45	17.80	17.60	16.40
Snakeweed	63.00	42.21	39.18				

Notes:

1 - If 2013 were available only as unwashed to compare to washed, then adjustment made to unwashed using regression equation between washed and unwashed of y = 0.9282x (R^2 = 0.55, See Appendix B-2). Such calculated values are gray.

2 - All samples consist of one above ground composite sample (n = 1) that includes seeds and above ground foliage from one species (collected throughout the plot).

3 - Copper is adjusted to remove dormancy bias downward by 35 percent.

Values provided are milligrams per kilogram (mg/kg); plant tissue includes combined seeds and foliage. Scientific names of plants are in Appendix B-1.

Table 9a
Before-After-Control-Impact (BACI) Means and Standard Errors - pH, Total Copper, and pCu means and Confidence Intervals

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Analyte by BACI Level	**Mean Estimate^1**	**Standard Error**	**95% Confidence Interval**	
			Lower	**Upper**
pH (L = add lime/organics)				
pre L Amendment	6.72	0.65	5.44	8.00
post L Amendment	6.84	0.62	6.54	8.10
pre Reference	6.11	0.65	4.84	7.39
post Reference	6.01	0.61	4.80	7.21
Cu in mg/kg (L = add lime/organics)				
pre L Amendment	1,966	450	1081	2851
post L Amendment	1,465	342	791	2139
pre Reference	2,198	435	1342	3053
post Reference	1,538	341	866	2210
pCu (L = add lime/organics)				
pre L Amendment	4.67	0.83	3.04	6.29
post L Amendment	5.55	0.69	4.19	6.90
pre Reference	4.27	0.81	2.68	5.86
post Reference	4.69	0.69	3.33	6.04
pH in mg/kg (till = add tilling)				
pre till Amendment	6.83	0.61	5.64	8.02
post till Amendment	7.10	0.56	6.00	8.21
pre Reference	6.19	0.59	5.02	7.35
post Reference	6.08	0.59	4.98	7.18
Cu in mg/kg (till = add tilling)				
pre till Amendment	2,005	488	1045	2964
post till Amendment	1,448	335	788	2107
pre Reference	2,134	412	1323	2946
post Reference	1,530	329	882	2178
pCu (till = add tilling)				
pre till Amendment	4.61	0.80	3.02	6.19
post till Amendment	5.81	0.60	4.64	6.99
pre Reference	4.35	0.71	2.97	5.74
post Reference	4.76	0.59	3.60	5.92

Notes:

1- average of the average of categories (by plot type and sampling period), called least square mean.

BACI is a mixed model ANOVA with fixed factors of planned treatment of plot (reference vs. amendment plot) and time period (before and after treatment) and random factors of plot location and sampling period.

Excludes white rain effect (no 2006 data)

L - plot that either will have or has had lime added (and organics always added with lime, though at different rates).

till - plot that either will be or has been tilled.

Amendment - plots that were either limed or tilled.

Reference - never limed for liming analyses, never tilled for tilling analyses (West Amendment Plot with its reference plot was included in the reference plots, as it was never treated or tilled).

ANOVA = Analysis of Variance with Post-hoc Tukey's HSD test used to obtain 95% confidence intervals on least squares means

Figures 16 and 17 show bar graphs of the least square means in this table (and their differences). Least square means are the average of the average values of the ANOVA categories by plot type and sampling period within the effect level of interest.

Cu = copper pCu = cupric iron activity

Table 9b
Before-After-Control-Impact (BACI) Mixed Model ANOVA Test Results - pH, Total Copper, and pCu

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Effect Level	Numerator df	Denominator df	F-Ratio	P-Value
pH (Amendment = add lime/organics)				
Pre- vs. Post-amendment Period	1	9	0.00	0.97
Lime + Organics Amendment Plot vs. Reference Plot	1	387	65.74	**<0.0001**
Interaction term of (Pre vs. Post-amendment Period) and (Lime+Amendment Plot vs. Reference Plot)	1	387	1.73	0.19
pH in mg/kg (till = add tilling)				
Pre- vs. Post-amendment Period	1	9	0.15	0.71
Tilled vs. Untilled Plot	1	387	58.23	**<0.0001**
Interaction term of (Pre vs. Post-Tilling Period) and (Tilled Plot vs. Untilled Plot)	1	387	3.34	**0.07**
Cu in mg/kg (Amendment = add lime/organics)				
Pre- vs. Post-amendment Period	1	9	6.366	**0.03**
Lime + Organics Amendment Plot vs. Reference Plot	1	314	0.643	0.42
Interaction term of (Pre vs. Post-amendment Period) and (Lime+Amendment Plot vs. Reference Plot)	1	314	0.179	0.67
Cu in mg/kg (till = add tilling)				
Pre- vs. Post-Tilling Period	1	9	5.68	**0.04**
Tilled vs. Untilled Plot	1	314	0.24	0.63
Interaction term of (Pre vs. Post-Tilling Period) and (Tilled Plot vs. Untilled Plot)	1	314	0.01	0.91
pCu (Amendment = add lime/organics)				
Pre- vs. Post-amendment Period	1	9	3.03	0.12
Lime + Organics Amendment Plot vs. Reference Plot	1	314	4.99	**0.03**
Interaction term of (Pre vs. Post-amendment Period) and (Lime+Amendment Plot vs. Reference Plot)	1	314	0.69	0.41
pCu (till = add tilling)				
Pre- vs. Post-Tilling Period	1	9	4.34	*0.07*
Tilled vs. Untilled Plot	1	314	4.07	**0.04**
Interaction term of (Pre vs. Post-Tilling Period) and (Tilled Plot vs. Untilled Plot)	1	314	1.63	0.20

Notes:

[1] Log transformed means were used with standard errors and confidence intervals; means are back-transformed to original units.

BACI is a mixed model ANOVA with fixed factors of planned treatment of plot (reference vs. amendment plot) and time period (before and after treatment) and random factors of plot location and sampling period.

Bolded P values are significant at $P < 0.05$. *Italicized* P values are nearly significant ($P \leq 0.10$).

See Table 9a for means for each category of the ANOVA and 95 percent confidence intervals from the Tukey's HSD Post-hoc comparison test

Amendment - plots that were either limed or tilled.

Reference - never limed or tilled (West Amendment Plot with its reference plot was included in the reference plots, as it was never treated or tilled).

ANOVA = Analysis of Variance Cu = copper pCu = cupric ion activity SPLP = Synthetic Precipitation Leaching Procedure mg/kg = milligrams per kilogram

Table 10

Mixed Model ANOVA[1] Results of Amendment Plots Before and After Amendment Application - Soluble Copper, TOC, and C:N Ratio

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Analyte	Mean Estimate Before Amendments[2]	Mean Estimate After Amendments	P-value
Comparison to one sampling event after application (6 months later)			
Soluble Copper [3]	0.10	0.91	**0.02**
TOC	1.09	1.43	0.14
C:N Ratio	18.16	20.38	0.32
Comparison to two sampling events after application (1.5 years later)			
TOC	1.09	1.47	**0.02**
C:N Ratio	17.84	13.07	**0.04**

Notes:

1 - No reference plots included because no data were available in the early years for reference plots (no BACI design). Amendments = lime and organic matter.

2 - Mean is average of average of plot type and sampling period, referred to as least square mean

3 -Soluble copper was log transformed in the tests; means shown are back-transformed to original units.

ANOVAs for TOC and C:N included 2006 data because these parameters were assumed to be unaffected by the white rain event.

ANOVA = Analysis of Variance
C:N = carbon:nitrogen ratio
Cu = copper
mg/L = milligrams per liter
SPLP = Synthetic Precipitation Leaching Procedure
TOC = total organic carbon

Bolded P values are significant at $P < 0.05$. *Italicized* are nearly significant ($P < 0.10$).

Degrees of freedom are 1,9 (numerator, denominator) for soluble copper, 1,14, for TOC/C:N for 6 months after, and 1,23 for 1.5 years after.

Table 11
ANOVA Results Comparing Amendment and Reference Plots from 2010 to 2013

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Variable	Mean Amendment	Mean Reference	F-Ratio[1]	P-value
Northeast - Amendment Plot (Lime and Organic Matter Only) and Reference Plot				
pH (s.u.)	5.67 (n=43)	5.02 (n=39)	10.75	**0.002**
pCu[2]	3.84 (n=43)	3.05 (n=39)	10.69	**0.002**
SPLP Cu[2] (mg/L)	0.54 (n=16)	3.16 (n=13)	6.63	**0.017**
Total Cu (mg/kg)	2269.93 (n=43)	2642.7 (n=39)	2.40	0.126
TOC[2] (%)	1.62 (n=23)	1.52 (n=15)	0.78	0.385
C:N	11.68 (n=23)	14.97 (n=15)	5.59	**0.025**
East - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot				
pH (s.u.)	6.95 (n=43)	5.28 (n=39)	47.30	**<0.001**
pCu	6.08 (n=43)	4.11 (n=39)	60.96	**<0.001**
SPLP Cu[2] (mg/L)	0.25 (n=16)	1.34 (n=13)	14.82	**0.001**
Total Cu (mg/kg)	884.08 (n=43)	1197.88 (n=39)	18.62	**<0.001**
TOC[2] (%)	1.6 (n=23)	0.75 (n=15)	26.75	**<0.001**
C:N	9.75 (n=23)	10.98 (n=15)	3.18	*0.085*
North - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot				
pH (s.u.)	6.46 (n=43)	5.77 (n=39)	16.01	**<0.001**
pCu	5.44 (n=43)	4.92 (n=39)	3.02	*0.087*
SPLP Cu[2] (mg/L)	0.19 (n=16)	0.36 (n=13)	1.47	0.238
Total Cu (mg/kg)	1114.89 (n=43)	979.36 (n=39)	1.13	0.292
TOC (%)	1.43 (n=23)	0.86 (n=15)	17.89	**<0.001**
C:N	12.36 (n=23)	17.1 (n=15)	4.94	**0.034**
West - Amendment Plot (Control, No Treatment) and Reference Plot				
pH (s.u.)	7.67 (n=43)	7.91 (n=37)	15.14	**<0.001**
pCu	6.12 (n=43)	6.82 (n=37)	12.45	**<0.001**
SPLP Cu[2] (mg/L)	0.03 (n=16)	0.02 (n=11)	6.27	0.216
Total Cu (mg/kg)	1648.21 (n=43)	1079.86 (n=37)	5.98	**0.017**
TOC (%)	1.27 (n=23)	1.3 (n=13)	0.16	0.696
C:N	12.65 (n=23)	13.12 (n=13)	0.14	0.708

Notes:

Bolded values indicate a significant difference between the amendment and reference plot (P<0.05).
Italicized vaules means nearly significant (P<0.10).
n = count
ANOVA = Analysis of Variance
C:N = carbon:nitrogen ratio
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
pCu = cupric iron activity
SPLP = Synthetic Precipitation Leaching Procedure
s.u. = standard units
TOC = Total Organic Carbon
1 - Blocked ANOVA with Year as Block. Year effect and interaction term not shown. Means are average of yearly means.
2 - Log transformed to meet test assumptions. SPLP Cu compared only for sampling events where lab used modified SPLP (with 5:1 ratio).

Table 12a
Variability in Soil Chemistry by Plot Using Different Sampling Approaches

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date	pH: Amendment Study Method[1]	pH: pH Monitoring Method[2]	Percent Difference	Total Copper: Amendment Study Method	Total Copper: pH Monitoring Method	Percent Difference	pCu: Amendment Study Method	pCu: pH Monitoring Method	Percent Difference
October 2013									
Reference #1 (West)	7.64	7.50	*-2%*	1021	605	*-69%*	6.48	6.95	*7%*
Reference #2 (North)	5.79	6.00	*4%*	760	578	*-31%*	5.10	5.61	*9%*
Reference #3 (Northeast)	5.35	6.70	*20%*	2023	1090	*-86%*	3.56	5.53	*36%*
Reference #4 (East)	5.95	6.00	*1%*	1100	923	*-19%*	4.82	5.07	*5%*
October 2012									
Reference #1 (West)	8.03	7.60	*-6%*	1113	1120	*1%*	6.74	6.33	*-6%*
Reference #2 (North)	6.04	5.80	*-4%*	1069	1170	*9%*	4.94	4.61	*-7%*
Reference #3 (Northeast)	5.49	5.10	*-8%*	2268	2250	*-1%*	3.56	3.21	*-11%*
Reference #4 (East)	6.56	4.80	*-37%*	1187	1210	*2%*	5.30	3.64	*-46%*
October 2011									
Reference #1 (West)	8.78	7.50	*-17%*	711	597	*-19%*	7.95	6.96	*-14%*
Reference #2 (North)	5.75	6.00	*4%*	861	687	*-25%*	4.92	5.41	*9%*
Reference #3 (Northeast)	4.60	5.60	*18%*	3235	1950	*-66%*	2.32	3.84	*39%*
Reference #4 (East)	4.70	5.40	*13%*	1320	1130	*-17%*	3.45	4.28	*19%*
October 2010									
Reference #1 (West)	8.48	7.85	*-8%*	1135	2153	*47%*	7.14	5.81	*-23%*
Reference #2 (North)	5.56	6.46	*14%*	1280	928	*-38%*	4.28	5.49	*22%*
Reference #3 (Northeast)	4.90	5.29	*7%*	3423	2773	*-23%*	2.54	3.14	*19%*
Reference #4 (East)	4.57	5.26	*13%*	1243	1699	*27%*	3.40	3.68	*8%*

Notes:

1 Amendment Study Method is average of eight 0-6" depth random samples in 104' x 104' square in 2012 and 2013. From 2010 to 2011, two samples were taken.

2 pH monitoring method is five composite samples in 50 m x 50 m square (taken at corners and center, shifted over each year).

pCu = cupric iron activity

Table 12b
Repeatability of Field Duplicates

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Date	Analyte	Units	Parent Result	Field Duplicate Result	RPD (%)
October 2013					
10/24/2013	Copper, total (3050)	mg/Kg	*1450*	101	170
10/24/2013	pH, Saturated Paste	units	*8*	7	2.7
October 2012					
10/9/2012	Copper, total (3050)	mg/Kg	*31200%*	159	65
10/9/2012	pH, Saturated Paste	units	*780%*	7.6	2.6

Notes:

Only sampling periods for which RPD is greater than 50% are displayed.

RPD = Relative Percent Difference

Table 13
Amendment Plot Percent Cover Relative to Short-Term Target of Greater than 70 Percent of Reference Plot

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines COmpany
Vanadium, New Mexico

Plot	October 2009				October 2010				October 2013			
	Total Vegetative Cover (%)	Total Native Cover[1] (%)	Performance Target (%)	Result	Total Vegetative Cover (%)	Total Native Cover[1] (%)	Performance Target (%)	Result	Total Vegetative Cover (%)	Total Native Cover[1] (%)	Performance Target (%)	Result
Northeast	63	63	> 60	Met Target	63	45	> 43	Met Target	63	61	> 44	Met Target
Northeast reference	85	85			63	60			63	63		
East	74	73[2]	> 44	Met Target	74	63[2]	> 19	Met Target	91	90[2]	> 44	Met Target
East reference	63	63			38	31			63	59		
North	51	50	> 44	Met Target	63	50	> 27	Met Target	85	81	> 44	Met Target
North reference	63	63			38	36			63	63		
West	74	74	> 60	Met Target	74	74	> 44	Met Target	74	73	> 44	Met Target
West reference	85	85			63	63			63	63		

Notes:

1 - Calculated by removing the estimated proportion of total cover (midpoint sums) of all species that were non-native (lambsquarters, Russian thistle, buffelgrass, and spreading fan petals).

2 - If Setaria sp. is the non-native green bristlegrass (Setaria viridis), then this percentage decreases to 72% in 2009, 73% in 2010, and 66% in 2013.

Table 14
Comparison of 2013 Cover Attributes to the Closure/Closeout Plan (CCP) Protocol Reclamation Success Guidelines

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot	2013		CCP Performance Criteria Target		Result
	Min. Cover[1]	# Species	Min. Cover[1]	# Species	
Northeast - Lime and Organic Matter Only					
Total Canopy Cover (%)	61.8%	---	38.0%	---	Met Target
Shrub Density (shrubs/m^2)	0.7	---	0.5	---	Met Target
Perennial Warm Season Grass Cover (%)	Trace	3	1.0%	3	Did Not Meet Target
Perennial Cool Season Grass Cover (%)	0%	0	0.5%	1	Did Not Meet Target
Perennial Shrub (%)	16.5%	3	1.0%	2	Met Target
Forbs (%)	2.4%	8	0.1%	1	Met Target
Number of Species (total)	---	14	---	8	Met Target
East - Lime and Organic Matter with Tilling					
Total Canopy Cover (%)	79.3%	---	38.0%	---	Met Target
Shrub Density (shrubs/m^2)	0	---	0.5	---	Did Not Meet Target
Perennial Warm Season Grass Cover (%)	5%	4	1.0%	3	Met Target
Perennial Cool Season Grass Cover (%)	0%	0	0.5%	1	Did Not Meet Target
Perennial Shrub (%)	6.5%	1	1.0%	2	Did Not Meet Target
Forbs (%)	5.6%	6	0.1%	1	Met Target
Number of Species (total)	---	11	---	8	Met Target
North - Lime and Organic Matter with Tilling					
Total Canopy Cover (%)	57.5%	---	38.0%	---	Met Target
Shrub Density (shrubs/m^2)	0.3	---	0.5	---	Did Not Meet Target
Perennial Warm Season Grass Cover (%)	3%	3	1.0%	3	Met Target
Perennial Cool Season Grass Cover (%)	0%	0	0.5%	1	Did Not Meet Target
Perennial Shrub (%)	19.2%	1	1.0%	2	Did Not Meet Target
Forbs (%)	1%	5	0.1%	1	Met Target
Number of Species (total)	---	9	---	8	Met Target
West - Control					
Total Canopy Cover (%)	66.3%	---	38.0%	---	Met Target
Shrub Density (shrubs/m^2)	0.6	---	0.5	---	Met Target
Perennial Warm Season Grass Cover (%)	3%	8	1.0%	3	Met Target
Perennial Cool Season Grass Cover (%)	0%	0	0.5%	1	Did Not Meet Target
Perennial Shrub (%)	28.6%	2	1.0%	2	Met Target
Forbs (%)	Trace	11	0.1%	1	Did Not Meet Target
Number of Species (total)	---	21	---	8	Met Target

Notes:

1 - Minimum cover is the cover level of the individual species with the least amount of cover. Trace is < 0.01%

CCP = Closure/Closeout Plan

m^2 = square meters

--- = not applicable

Table 15
Canopy Cover of Each Species on Amendment and Adjacent Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

		Species Name		Canopy Cover (0.01 acre subplot) as midpoint of Daubenmire Class					
Region	**Plot #**	**Common**	**Latin**	**March 2008**	**December 2008**	**October 2009**	**April 2010**	**October 2010**	**October 2013**
West - Control	Amendment 1								
		Broom snakeweed	*Gutierrexia sarothrae*	20.5	20.5	20.5	38	38	-
		Honey mesquite	*Prosopis glandulosa*	10.5	10.5	10.5	20.5	20.5	20
		Sideoats grama	*Bouteloua curtipendula*	38	38	38	63	63	63
		Blue grama	*Bouteloua gracilis*	3	3	-	-	3	10
		Ring muhly	*Muhlenbergia torreyi*	3	3	20.5	3	10.5	3
		Arizona three-awn	*Aristida arizonica*	0.5	3	0.5	10.5	3	-
		Purple loco	*Oxytropis lambertii*	0.5	0.5	-	-	-	-
		Vine mesquite	*Panicum obtusum*	-	10.5	-	-	3	3
		Unidentified Muhlenbergia	*Muhlenbergia sp.*	-	3	-	-	-	-
		Beardgrass	*Bothriochloa barbinodis*	-	-	0.5	-	-	-
		Wait-a-minute bush	*Mimosa biuncifera*	-	-	3	10.5	-	3
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	3	3	3	3
		Baby aster	*Chaetopappa ericoides*	-	-	-	3	-	-
		Acacia seedling	*Acacia sp.*	-	-	-	0.5*	3*	-
		Spreading three-awn	*Aristida divaricata*	-	-	-	-	3	-
		Slender goldenweed	*Xanthisma gracile*	-	-	-	-	0.5	-
		Twin leaf senna	*Senna bauhinioides*	-	-	-	-	0.5	-
		Bristlegrass	*Setaria sp.*	-	-	-	-	0.5	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	0.5	38
		Six week three-awn	*Aristida adscensionis*	-	-	-	-	-	3
		Wild onion	*Allium macropetalum*	-	-	-	-	-	0.5
		Spreading fan petals	*Sida abutifolia*	-	-	-	-	-	3
		Blackfoot	*Melampodium leucanthum*	-	-	-	-	-	0.5
		Dogweed	*Dyssodia papposa*	-	-	-	-	-	0.5
		Bearded dalea	*Dalea pogonathera*	-	-	-	-	-	3
		Hairyseed bahia	*Bahia absinfolia*	-	-	-	-	-	3
		Unidentified forb		-	-	-	0.5*	-	-
West - Control	Amendment 2								
		Honey mesquite	*Prosopis glandulosa*	20.5	20.5	20.5	38	38	38
		Broom snakeweed	*Gutierrexia sarothrae*	20.5	38	20.5	38	38	-
		Arizona three-awn	*Aristida arizonica*	10.5	3	0.5	10.5	10.5	0.5
		Red three-awn	*Aristida purpurea*	10.5	10.5	3	10.5	20.5	10.5
		Beardgrass	*Bothriochloa barbinoidis*	3	10.5	10.5	10.5	10.5	3
		Sideoats grama	*Bouteloua curtipendula*	3	3	3	3	10.5	10.5
		Wait-a-minute bush	*Mimosa biuncifera*	0.5	0.5	0.5	3	-	-
		Ring muhly	*Muhlenbergia torreyi*	10.5	20.5	10.5	38	38	10.5
		Purple loco	*Oxytropis lambertii*	0.5	3	-	-	-	0.5
		Soap tree yucca	*Yucca elata*	3	0.5	3	3	3	-
		Vine mesquite	*Panicum obtusum*	-	3	-	3	10.5	10.5
		Prickly pear	*Opuntia sp.*	-	-	0.5	-	-	-
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	0.5	3	3	3
		Twin leaf senna	*Senna bauhinioides*	-	-	3	3	3	3
		Baby aster	*Chaetopappa ericoides*	-	3	-	-	-	-
		Unidentified forb		-	3*	0.5*	0.5*	-	-
		Wild onion	*Allium macropetalum*	-	-	-	3	-	-
		Acacia seedling	*Acacia sp.*	-	-	-	-	3*	3
		Slender goldenweed	*Xanthisma gracile*	-	-	-	-	10.5	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	0.5	38
		Bearded dalea	*Dalea pogonathera*	-	-	-	-	-	0.5
		Blackfoot	*Melampodium leucanthum*	-	-	-	-	-	0.5
		Wild zinnia	*Zinnia grandiflora*	-	-	-	-	-	3
West	Reference 1								
		Purple loco	*Oxytropis lambertii*	3	10.5	-	0.5	-	3
		Sideoats grama	*Bouteloua curtipendula*	38	38	63	10.5	38	38
		Arizona three-awn	*Aristida arizonica*	20.5	10.5	10.5	-	10.5	10.5
		Broom snakeweed	*Gutierrexia sarothrae*	10.5	20.5	20.5	10.5	10.5	3
		Beardgrass	*Bothriochloa barbinodis*	0.5	-	-		-	-
		Wait-a-minute bush	*Mimosa biuncifera*	0.5	3	3	10.5	3	3
		Vine mesquite	*Panicum obtusum*	-	10.5	3	3	3	3
		Blue grama	*Bouteloua gracilis*	-	3	-	10*	-	-
		Ring muhly	*Muhlenbergia torreyi*	-	3	3	-	-	3
		Buffelgrass	*Pennisetum ciliare*	-	0.5	-	-	-	-
		Baby aster	*Chaetopappa ericoides*	-	3	0.5	10.5	-	3
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	3	3	0.5	3
		Honey mesquite	*Prosopis glandulosa*	-	-	0.5	3	-	-
		Wild onion	*Allium macropetalum*	-	-	-	3	-	-
		Acacia seedling	*Acacia sp.*	-	-	-	3*	0.5*	-
		Slender goldenweed	*Xanthisma gracile*	-	-	-	-	0.5	-
		Spreading three-awn	*Aristida divaricata*	-	-	-	-	3	-
		Unknown forb		-	-	-	-	3*	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	-	38
		Twin leaf senna	*Senna bauhinioides*	-	-	-	-	-	3
		Spreading fan petals	*Sida abutifolia*	-	-	-	-	-	0.5
		Blackfoot	*Melampodium leucanthum*	-	-	-	-	-	0.5
		Dogweed	*Dyssodia papposa*	-	-	-	-	-	0.5

Table 15
Canopy Cover of Each Species on Amendment and Adjacent Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

		Species Name		Canopy Cover (0.01 acre subplot) as midpoint of Daubenmire Class					
Region	**Plot #**	**Common**	**Latin**	**March 2008**	**December 2008**	**October 2009**	**April 2010**	**October 2010**	**October 2013**
North - Lime and Organic Matter with Tilling	Amendment 1[1]								
		Honey mesquite	*Prosopis glandulosa*	20.5	20.5	20.5	20.5	38	38
		Russian thistle	*Salsola tragus*	-	63	3	3	-	10.5
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	3	3	-	3	3
		Whiteball acacia	*Acacia angustissima*	-	3	-	-	-	-
		Scarlet globemallow	*Sphaeralcea coccinea*	-	-	10.5	3	10.5	-
		Vine mesquite	*Panicum obtusum*	10.5	-	20.5	20.5	20.5	20.5
		Soap tree yucca	*Yucca elata*	20.5	-	10.5	3	3	3
		Unidentified saltbush	*Atriplex sp.*	-	-	-	3*	-	-
		Composite seedling		-	-	-	0.5*	-	-
		Lambsquarters	*Chenopodium album*	-	-	-	-	10.5	-
		Narrowleaf goosefoot	*Chenopodium leptophyllum*	-	-	-	-	38	-
		Tansy aster	*Machaeranthera tanacetifolia*	-	-	-	-	3	-
		Many flowered blazing star	*Mentzelia multiflora*	-	-	-	-	3	-
		Annual goldeneye	*Heliomeris longifolia var. annua*	-	-	-	-	3	-
		Arizona three-awn	*Aristida arizonica*	10.5	-	-	-	-	-
		Carelessweed	*Amaranthus palmeri*	-	3	-	-	10.5	38
North - Lime and Organic Matter with Tilling	Amendment 2[1]								
		Soap tree yucca	*Yucca elata*	10.5	3	10.5	-	-	-
		Vine mesquite	*Panicum obtusum*	20.5	3	20.5	20.5	20.5	38
		Honey mesquite	*Prosopis glandulosa*	10.5	20.5	20.5	20.5	38	20.5
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	10.5	20.5	0.5	3	-
		Russian thistle	*Salsola tragus*	-	20.5	-	-	10.5	-
		Composite seedling		-	-	-	0.5*	-	-
		Scarlet globemallow	*Sphaeralcea coccinea*	-	3	10.5	3	3	-
		Tansy aster	*Machaeranthera tanacetifolia*	-	-	3	3	3	-
		False mesquite	*Calliandra humilis*	-	-	0.5	-	-	-
		Unidentified saltbush	*Atriplex sp.*	-	-	-	3	-	-
		Lambsquarters	*Chenopodium album*	-	-	-	3	38	-
		Narrowleaf goosefoot	*Chenopodium leptophyllum*	-	-	-	-	10.5	-
		Many flowered blazing star	*Mentzelia multiflora*	-	-	-	-	10.5	-
		Whiteball acacia	*Acacia angustissima*	-	-	-	-	3	-
		Beardgrass	*Bothriochloa barbinodis*	0.5	-	-	-	-	-
		Sideoats grama	*Bouteloua curtipendula*	3	-	-	-	-	-
		Arizona three-awn	*Aristida arizonica*	10.5	-	-	-	-	-
		Composite seedling		3*	-	-	-	-	-
		Carelessweed	*Amaranthus palmeri*	-	10.5	-	3	-	63
		Bearded dalea	*Dalea pogonathera*	-	-	-	-	-	3
North	Reference 1[1]								
		Soap tree yucca	*Yucca elata*	3	10.5	20.5	20.5	10.5	20.5
		Vine mesquite	*Panicum obtusum*	3	38	10.5	-	3	10.5
		Honey mesquite	*Prosopis glandulosa*	38	38	38	20.5	38	38
		Sideoats grama	*Bouteloua curtipendula*	-	10.5	0.5	-	-	-
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	3	0.5	3	3	3
		Whiteball acacia	*Acacia angustissima*	-	3	-	-	-	-
		Purple loco	*Oxytropis lambertii*	-	0.5	-	-	-	-
		Broom snakeweed	*Gutierrexia sarothrae*	-	0.5	3	-	-	-
		Russian thistle	*Salsola tragus*	-	10.5	-	-	-	-
		Composite seedling		-	0.5*	-	-	-	-
		Scarlet globe mallow	*Sphaeralcea coccinea*	-	-	-	0.5	-	-
		Acacia seedling	*Acacia sp.*	-	-	-	-	3*	0.5
		Narrowleaf goosefoot	*Chenopodium leptophyllum*	-	-	-	-	0.5	-
		Tansy aster	*Machaeranthera tanacetifolia*	-	-	-	-	3	-
		Unidentified forb		-	-	-	0.5*	-	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	0.5	10.5
Northeast - Lime and Organic Matter Only	Amendment 1[1]								
		Sideoats grama	*Bouteloua curtipendula*	20.5	10.5	-	-	-	-
		Honey mesquite	*Prosopis glandulosa*	3	20.5	20.5	10.5	3	-
		False mesquite	*Calliandra humilis*	-	10.5	-	20.5	10.5	3
		Whiteball acacia	*Acacia angustissima*	-	20.5	3	-	3	38
		Lote bush	*Ziziphus obtusifolia*	-	38	38	38	38	38
		Rabbit thorn	*Lycium pallidum*	-	-	10.5	10.5	10.5	20.5
		Lambsquarters	*Chenopodium album*	-	-	-	-	20.5	10.5
		Bee brush	*Aloysia wrightii*	-	-	-	3	3	10.5
		Soap tree yucca	*Yucca elata*	-	-	-	-	0.5	3
		Blue grama	*Bouteloua gracilis*	20.5	-	-	-	-	-
		Sotol	*Dasylirion wheeleri*	3	-	-	-	-	-
		Prickly pear	*Opuntia sp.*	3	-	-	-	-	-
		Wait-a-minute bush	*Mimosa biuncifera*	3	-	-	-	-	-
		Unidentified shrub		0.5*	-	-	-	-	-
		Unidentified forb		0.5*	-	-	-	-	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	-	3
		Golden crownbeard	*Verbesina encelioides*	-	-	-	-	-	3
		Silverleaf nightshade	*Solanum eleagnifolium*	-	-	-	-	-	3
		Mountain mahogany seedlin	*Cercocarpus montanus*	-	-	-	-	-	0.5
		Bearded dalea	*Dalea pogonathera*	-	-	-	-	-	3

Table 15
Canopy Cover of Each Species on Amendment and Adjacent Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Region	Plot #	Species Name		Canopy Cover (0.01 acre subplot) as midpoint of Daubenmire Class					
		Common	Latin	March 2008	December 2008	October 2009	April 2010	October 2010	October 2013
Northeast - Lime and Organic Matter Only	Amendment 2[1]								
		Honey mesquite	*Prosopis glandulosa*	20.5	20.5	38	38	38	38
		Whiteball acacia	*Acacia angustissima*	10.5	38	20.5	20.5	20.5	38
		False mesquite	*Calliandra humilis*	-	10.5	-	20.5	10.5	-
		Desert holly	*Atriplex hymenelytra*	-	0.5	-	-	-	-
		Curly mesquite	*Hilaria belangeri*	-	-	3	-	3	-
		Rabbit thorn	*Lycium pallidum*	-	10.5	3	3	-	-
		Vine mesquite	*Panicum obtusum*	-	-	3		3	0.5
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	3	3	10.5	10.5
		Baby aster	*Chaetopappa ericoides*	-	3	-	3	0.5	-
		Tobosa	*Pleuraphis mutica*	-	-		10.5	-	3
		Scarlet globemallow	*Sphaeralcea coccinea*	-	-	-	3	3	3
		Bee brush	*Aloysia wrightii*	10.5	-	-	3	3	3
		Lambsquarters	*Chenopodium album*	-	-	-	-	38	-
		Purple or hoary aster	*Dieteria sp.*	-	-	-	-	0.5	-
		Slender goldenweed	*Xanthisma gracile*	-	-	-	-	3	-
		Russian thistle	*Salsola tragus*	-	-	-	-	3	-
		Sotol	*Dasylirion wheeleri*	3					-
		Sideoats grama	*Bouteloua curtipendula*	10.5					3
		Tick clover	*Desmodium sp.*	3	-	-	-	-	-
		Yerba de pasmo	*Baccharis pteronoides*	3	-	-	-	-	-
		Four wing saltbush	*Atriplex canescens*	10.5	-	-	-	-	-
		Unidentified forb		-	-	3*	-	-	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	-	38
		Six week three-awn	*Aristida adscensionis*	-	-	-	-	-	3
Northeast	Reference 1								
		Sotol	*Dasylirion wheeleri*	10.5	10.5	3	3	3	3
		Sideoats grama	*Bouteloua curtipendula*	10.5	3	10.5	10.5	3	3
		Honey mesquite	*Prosopis glandulosa*	3	10.5	20.5	38	38	38
		Whiteball acacia	*Acacia angustissima*	10.5	38	38	38	38	38
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	3	3	3	3	3
		Vine mesquite	*Panicum obtusum*	-	20.5	38	20.5	20.5	20.5
		Tick clover	*Desmodium sp.*	-	-	3	3	10.5	10.5
		Prickly pear	*Opuntia sp.*	3	-	-	-	-	-
		Tobosa	*Pleuraphis mutica*	-	10.5	-	3	3	3
		Lambsquarters	*Chenopodium album*	-	-	-	-	3	-
		False mesquite	*Calliandra humilis*	-	-	-	-	3	-
		Unidentified shrub		20*	-	-	-	-	-
East - Lime and Organic Matter with Tilling	Amendment 1								
		Honey mesquite	*Prosopis glandulosa*	63	3	10.5	10.5	3	3
		Russian thistle	*Salsola tragus*	-	38	0.5	-	38	3
		Whiteball acacia	*Acacia angustissima*	-	10.5	-	-	3	-
		Golden crownbeard	*Verbesina encelioides*	-	20.5	38	3	63	38
		Broom snakeweed	*Gutierrexia sarothrae*	-	-	3	-	3	10.5
		Yerba de pasmo	*Baccharis pteronoides*	-	-	0.5	-	-	-
		Bristlegrass	*Setaria sp.*	-	-	-	3	-	38
		Scarlet globemallow	*Sphaeralcea coccinea*	-	-	-	3	3	-
		Unidentified forb		-	-	-	0.5*	-	-
		Narrowleaf globemallow	*Sphaeralcea angustifolia*	-	-	-	-	0.5	-
		Tansy aster	*Machaeranthera tanacetifolia*	-	-	-	-	3	-
		Lambsquarters	*Chenopodium album*	-	-	-	-	3	-
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	-	-	0.5	3
		Narrowleaf goosefoot	*Chenopodium leptophyllum*	-	-	-	-	0.5	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	-	20.5
		Hog potato	*Hoffmannseggia glauca*	-	-	-	-	-	3
		Saltbush sp.	*Atriplex sp.*	-	-	-	-	-	3
		Red three awn	*Aristida purpurea*	-	-	-	-	-	3
		Sideoats grama	*Bouteloua curtipendula*	-	-	-	-	-	3
East - Lime and Organic Matter with Tilling	Amendment 2								
		Honey mesquite	*Prosopis glandulosa*	38	-	3	3	3	3
		Broom snakeweed	*Gutierrexia sarothrae*	10.5	-	-	-	0.5	-
		Ring muhly	*Muhlenbergia torreyi*	0.5	-	-	-	-	-
		Russian thistle	*Salsola tragus*	-	63	0.5	-	-	-
		Golden crownbeard	*Verbesina encelioides*	-	38	63	0.5	63	63
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	20.5	3	10.5	20.5
		Whiteball acacia	*Acacia angustissima*	-	-	0.5	3	20.5	-
		Bristlegrass	*Setaria sp.*	-	-	3	3	10.5	63
		Composite seedling		10.5*	-	-	-	-	-
		Scarlet globemallow	*Sphaeralcea coccinea*	-	-	-	3	0.5	-
		Unidentified saltbush	*Atriplex sp.*	-	-	-	0.5	-	-
		Unidentified forb		-	-	-	0.5*	-	-
		Narrowleaf goosefoot	*Chenopodium leptophyllum*	-	-	-	-	10.5	-
		Tansy aster	*Machaeranthera tanacetifolia*	-	-	-	-	3	-
		Sideoats grama	*Bouteloua curtipendula*	-	-	-	-	3	3
		Feather fingergrass	*Chloris virgata*	-	-	-	-	-	20.5
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	38	20.5
		Hog potato	*Hoffmannseggia glauca*	-	-	-	-	-	10.5

Table 15
Canopy Cover of Each Species on Amendment and Adjacent Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Region	Plot #	Species Name		Canopy Cover (0.01 acre subplot) as midpoint of Daubenmire Class					
		Common	Latin	March 2008	December 2008	October 2009	April 2010	October 2010	October 2013
East	Reference 1								
		Honey mesquite	*Prosopis glandulosa*	38	20.5	38	20.5	20.5	20.5
		Broom snakeweed	*Gutierrexia sarothrae*	10.5	10.5	20.5	10.5	10.5	3
		Russian thistle	*Salsola tragus*	-	3	-	-	10.5	3
		Whiteball acacia	*Acacia angustissima*	-	10.5	3	3	10.5	-
		Silverleaf nightshade	*Solanum elaeagnifolium*	-	-	3	-	3	3
		Composite seedling		3*	3*	-	-	0.5*	-
		Unidentified forb		-	10.5*	-	0.5*	-	-
		Lambsquarters	*Chenopodium album*	-	-	-	-	10.5	3
		Many flowered blazing star	*Mentzelia multiflora*	-	-	-	-	3	-
		Tansy aster	*Machaeranthera tanacetifolia*	-	-	-	-	3	-
		Golden crownbeard	*Verbesina encelioides*	-	-	-	-	3	10.5
		Dropseed sp.	*Sporobolus sp.*	-	-	-	-	0.5	-
		Carelessweed	*Amaranthus palmeri*	-	-	-	-	-	38
		Hog potato	*Hoffmannseggia glauca*	-	-	-	-	-	20.5
		Wild zinnia	*Zinnia grandiflora*	-	-	-	-	-	3

Notes:

1 -March 2008 data for the North and Northeast plots were sampled in a slightly different location than data sampled from Dec. 2008 to 2013.

* - Unable to identify species due to lack of appropriate vegetative and/or reproductive material.

Table 16a

Difference[1] between Amendment and Reference Vegetation Characteristics before and after Amendment / White Rain Application

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

	Difference between before and after (Year 2013 minus Year 2008)				
Variable	**Reference Plot Change (white rain effect by 2013)**	**Increased or Decreased from white rain by 2013[2]**	**Amendment Plot Change (white rain plus amendment effect by 2013)**	**Amendment Change minus Reference Change**	**Increased or Decreased from amendment/tilling by 2013[2]**
Northeast					
Percent Cover	-22	Decreased	-11	11	*Increased*
Species Richness	2	Increased	3	1	Uncertain
Shannon Diversity	0.01	Uncertain	0.13	0.12	Uncertain
Evenness	-0.12	Decreased	-0.05	0.07	Uncertain
East					
Percent Cover	0.00	Neither	28.5	29	Uncertain/Increased[3]
Species Richness	6	Increased	7	1	*Increased*
Shannon Diversity	1.03	Increased	1.30	0.26	*Increased*
Evenness	0.15	Increased	0.45	0.31	Increased
North					
Percent Cover	25	Uncertain[4]	22	-3	Uncertain
Species Richness	3	Increased	-1	-4	Uncertain
Shannon Diversity	0.88	Increased	-0.21	-1.09	Uncertain
Evenness	0.32	Increased	-0.10	-0.42	Decreased
West (2 reference plots)					
Percent Cover	0, -11	Neither to Decreased	--	--	--
Species Richness	8, 6.5	Increased	--	--	--
Shannon Diversity	0.61, 0.31	Increased	--	--	--
Evenness	0.04, -0.04	Neither	--	--	--

Note:

1 - Year 2008 is March 2008, which is dormant season representing pre-white rain community that grew in growing season of fall 2007. Numbers in the second column are the absolute change between before white rain and last sampling year of 2013 in reference plots. However, effect of variabililty over time is missed in such comparisons and thus statistical analyses in Appendix 20a (one-sample *t* test) compared the post-white rain mean to pre-white rain estimates, and if not significant then direction of change is considered to be "neither", or if large change, "uncertain". The same process was used to evaluate change from treatments reported in the last column.

2 - Sample size is one (n=1) for each reference plot, and thus decision had to be based on professional judgment based on magnitude of difference at end of 5 years and variability (if mean significantly different in Appendix 20a) during the 4 post-effect years.

3 -Though P = 0.53 in Appendix 20a, the high variability is driven by low cover during spring season 2010 when the herbaceous plant material that had become abundant after tilling dies back; Excluding this spring season produces a significant increase in cover (P = 0.04).

4 - Though significant at P = 0.07 (Appendix B-20a), the low spring 2008 pre-white rain cover estimate occurs again in spring 2010 and during another fall period, falling within the range of variability, creating uncertainy as to whether it increased or not (see Figure 9a).

-- means not evaluated. The two control West plots were not treated with amendment or tilling and are evaluated only for white rain effects

Italics means within magnitude of range of change of two West control plots that were not treated, making this conclusion less certain.

Table 16b

Difference[1] between Amendment and Reference Vegetation Growth Forms before and after Amendment / White Rain Application

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

	Difference before and after (Year 2013 - Year 2008)				
Variable	**Reference Plot Change (white rain effect)**	**Increased or Decreased from white rain[2]**	**Amendment Plot Change (white rain plus amendment effect)**	**Amendment minus Reference**	**Increased or Decreased from amendment/tilling[2]**
Northeast					
Proportion Cover in Non-woody	29%	Increased	4%	-25%	Uncertain
Proportion Cover in Grasses	4%	Minor increase	-39%	-43%	Decreased
Proportion Cover in Annuals	0%	Uncertain	20%	20%	Uncertain
East					
Proportion Cover in Non-woody	54%	Increased	80%	26%	Increased
Proportion Cover in Grasses	0%	Uncertain	39%	39%	Increased
Proportion Cover in Annuals	16%	Minor decrease	50%	34%	Increased
North					
Proportion Cover in Non-woody	23%	Increased	26%	3%	*Minor increase*
Proportion Cover in Grasses	6%	Uncertain	-20%	-26%	*Decreased*
Proportion Cover in Annuals	13%	Increased	47%	34%	Increased
West					
Proportion Cover in Non-woody	-2%, 1%	Neither	--	--	--
Proportion Cover in Grasses	-31%, 2%	Neither to Decreased	--	--	--
Proportion Cover in Annuals	34%, 27%	Uncertain	--	--	--

Note:

1 - Year 2008 is March 2008, which is dormant season representing pre-white rain community that grew in growing season of fall 2007. Numbers in the second column are the absolute change between before white rain and last sampling year of 2013 in reference plots. However, effect of variabililty over time is missed in such comparisons and thus statistical analyses in Appendix 20a (one-sample *t* test) compared the post-white rain mean to pre-white rain estimates, and if not significant then direction of change is considered to be "neither", or if large change, "uncertain". The same process was used to evaluate change from treatments reported in the last column.

2 - Sample size is one (n=1) for each reference plot, and thus decision had to be based on professional judgment based on magnitude of difference at end of 5 years and variability (if mean significantly different in Appendix 20a) during the 4 post-effect years.

-- means not evaluated. West plots were not treated with amendment or tilling and are evaluated only for white rain effects

Italicized values mean within magnitude of range of change of two West control plots that were not treated, making this conclusion less certain.

Table 17
Weight of Evidence Table for Primary Metrics by Amendment Type and Plot Type

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Amendment Approach and Plot Type	pCu increase?[1]				If pCu increased, did Cu concentration decrease in tissue?			If pCu increased, did richness increase?[2]		If pCu increased, did cover increase?[2]		Vegetation Establishment/Composition after 5 Years[2]	Method Recommended for Plot Type?
	Initially increase from technology or white rain?	Effect persistent?	Persistent Relative to Reference?	Meet pre-FS RAC?	Initially decrease? Decrease to near background level for herbaceous species (≤13 mg/kg)?	Effect persistent?	Persistent relative to Reference?	Initially increase relative to reference (if reference available)?	Effect persistent (if not initially effective, then effective later)?	Initially increase (relative to reference if available)?	Effect persistent (if not initially effective, then effective later)?	All Short and Long-term (5-year) Criteria Likely Met with Method? Rangeland Grasses Improve?	
White Rain (initial) and Subsequent Natural Attenuation (persistence for 5 years)													
Poor Rangeland (East)	Yes	Yes (inc.)	--	No	Yes/Yes	Yes	--	Yes	Yes	No	No	No criteria; beardgrass, silverleaf nightshade, and carelessweed newly established in small amounts	**NA**
Fair Rangeland (North)	Yes	Yes	--	Yes	Yes/Yes	Yes	--	Yes	No (uncertain)	Yes (but uncertain)	No (inconsistent)	No criteria; silverleaf nightshade and carelessweed newly established in small amounts	**NA**
Steep Slope, Fair Rangeland (Northeast)	Yes (smaller effect)	Yes	--	No	Yes/No	Yes	--	Yes	Yes	No	No	No criteria; silverleaf nightshade, vine mesquite, tobosa, and carelessweed newly established in small amounts	**NA**
West (control)	Yes	No (but still high)	--	Yes (even before white rain)	Yes/Yes	Yes	--	Yes	Yes	No	No	No criteria; carelessweed in high amount and some other forbs and grasses established in small amounts (may have been present before)	**NA**
Till to 8" depth (to potentially reduce soil Cu and increase pCu)													
Poor Rangeland (East)	No	--	--	--	--	--	--	--	--	--	--	Yes, except shrub density, shrub richness need more time, and no cool season grasses (not expected in future); also too many potentially toxic annuals. Gained perennial grasses (possibly from decompacting soil).	**No** (not to only 8", deeper possibly)
Fair Rangeland (North)	No	--	--	--	--	--	--	--	--	--	--	Yes, except not quite yet for shrub density, shrub richness, and no cool season grasses (not expected in future); also, too many potentially toxic annuals and loss of grass cover (tilling removed grasses, replaced with annual forbs). Set back to earlier stage of succession.	**No**
Lime added (at 1.3 t/ac) to increase pH on plots already limed with white rain (which would further increase pCu beyond white rain effect)													
Steep Slope, Fair Rangeland (Northeast)	No	--	--	No	No	--	No	No	--	--	--	Yes, except no cool season grasses; also loss of grass cover (possibly from disturbance or TOC in organic matter because liming from white rain alone did not decrease grasses)	**No**
Tilling and Lime added													
Poor Rangeland (East)	Not significant (P = 0.2) but low power so uncertain	If increased beyond white rain (uncertain), Yes	No	Yes	Yes/Yes (might be from white rain only)	Yes (might be only from white rain)	Yes (might be only from white rain)	No (because reference inc.)	Yes, but uncertain because small effect and may not be due to pCu change	Yes (uncertain if due to pCu change)	Yes (uncertain if due to pCu change)	Yes, except shrub density and shrub richness need more time; no cool season grasses; also too many potentially toxic annuals. Gained perennial grass (possibly from tilling decompacting soil because of CCA results and lime in white rain alone did not increase grasses).	**Yes**, only if (1) no steady improvement in pCu naturally, and (2) degradation is due to copper toxicity, not just overgrazing.Most of the improvement was from decompaction and only small change from white rain increasing pCu.
Fair Rangeland (North)	Not significant (P = 0.2) but low power so uncertain	If increased beyond white rain (uncertain), Yes	If increased beyond white rain (uncertain), Yes	Yes	Yes /Yes (might be from white rain only)	Yes (might be only from white rain)	Yes (might be only from white rain)	No	No	No	--	Yes, except not quite yet for shrub density, shrub richness; no cool season grasses; also, too many potentially toxic annuals and loss of grass cover (and grasses not lost by liming from white rain alone so may be from tilling and organic matter). Set back to earlier stage of succession.	**No**
Organic Matter Effective?[3]													
Steep Slope, Fair Rangeland (Northeast)	No	No	--	--	No	--	--	--	--	--	--	Vegetation established, except no cool season grasses; organic matter may increase annual forbs somewhat and their toxicity; may decrease perennial grasses, facilitating high-nutrient-loving annual weeds	**No**

Notes:

1 - Conclusions are estimates based on weight of evidence for plots evaluated with their pH and pCu levels and are also supported by change in supporting metrics such as pH (increased from white rain alone and on amended and tilled plots but not on limed-only plot) and ABA results (found not to be acid-generating); calculated pCu was verified by measured pCu. Met pH criteria of ≥ 5.5. Soluble copper and total copper did not significantly decrease from white rain or any remedial technology.

2 - More qualitative and uncertain as to cause. May be affected by pCu, weather, TOC (TOC increased from organic matter and natural attenuation, meeting target of 1%) , or C:N (decreased from natural attenuation and organic matter, meeting target of below 15:1), and supplemental nutrient data (nitrites/nitrates increased, especially on East and North plots). Note that C:N was lower than minimum 8:1 target on poor rangeland plot at 7.5:1 (too much organic matter at 48 t/ac). If pCu did not increase with a corresponding decrease in tissue Cu, could assume any changes in cover and richness not caused by the remedial technology, but note that pCu results for tilled and amended plots are highly uncertain due to low power of tests.

3 - Organic matter effectiveness can not be evaluated for the poor rangland and fair rangeland areas on relatively flat ground (North and East) because not separated from lime or tilling effects. Lime and organic matter were ineffective at changing pCu on Northeast plot, so organic matter assumed ineffective.

-- = not applicable

ABA = acid-base accounting

C:N = carbon:nitrogen ratio

mg/kg = milligrams per kilogram

NA = not available

Cu = copper

pCu = cupric iron activity

pre-FS RAC = pre-Feasibility Study Remedial Action Criteria

TOC = total organic carbon

inc. = increased over five years

Table 18
Evaluation of Weight of Evidence for Effectiveness of Three Treatments when Applied Separately

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Treatment effect alone[1]	Rangeland condition, soil category[2]	Increase?								
		pH	pCu	reduction of copper uptake in plants	cover	richness	grass cover	successional stage	Notes on Effect	Recommended as a remedy alone?
Lime	poor, flat rocky (East)	yes	yes	yes	No	Yes	Minor[3]	Minor	white rain report, this report, phytotoxicity & community report. Sitewide ERA	
	fair, flat granular (North)	yes	yes	yes	Minor	Yes	Minor[3]	Minor	white rain report, this report, phytotoxicity & community report. Sitewide ERA	No, because it did not increase total cover, which is needed to improve habitat for wildlife and livestock.
	fair, slope (Northeast)	yes	yes	yes	No	Yes	Minor[3]	Minor	white rain report, this report, phytotoxicity & community report. Sitewide ERA	No, because it did not increase total cover, which is needed to improve habitat for wildlife and livestock.
Tilling	poor, flat rocky (East)	unknown	unknown	unknown	Yes	Yes	Yes	Yes	Anecdotal observations of haul road in early years, photos in later years, decompaction is key, but mixing surface and subsurface may increase pCu	Yes, haul road tilling was effective in improving habitat for wildlife and livestock
	fair, flat granular (North)	unknown	unknown	unknown	No	No	No	No	Reversed successional stage by increasing annuals, decreasing grass cover	No, more harm than good. Decompaction of granular soil not needed, and disturbance will set back succession too long
	fair, slope (Northeast)	--	--	--		--	--	--	Slope terrain is too rough and can not be tilled	No, more harm than good, plus not feasible to till
Organic matter	poor, flat rocky (East)	No[4]	No	No	unknown	No	No	No	Lime and tilling caused an increase in richness, unlikely organic matter increased it more based on literature. Unless organic matter extremely low (not the case in test plots), unlikely will increase cover. Tilling without organic matter produced a beneficial outcome of high grass diversity and abundance. Organic matter may have slowed succession to desired outcome.	No, generally not effective in semi-arid soils and possibly detrimental.
	fair, flat granular (North)	No[4]	No	No	No	No	No	No	Organic matter, lime and tilling reversed succession and decreased evenness and grasses. Though uncertain, organic matter may facilitate weed invasion and slow down succession and reduce diversity.	No, generally not effective in semi-arid soils and possibly detrimental.
	fair, slope (Northeast)	No[4]	No	No	unknown	unknown	No	No	Driving on plot and spraying reversed succession; no pH improvement or reduced pCu uptake from organics or lime, possibly increased soluble copper. Though uncertain, organic matter may facilitate weed invasion and slow down succession and reduce diversity.	No, generally not effective in semi-arid soils and possibly detrimental.

1- Based on white rain effects for lime (equivalent to light liquid spray), haul road effects for tilling or ripping (to 12 to 18 inches), and comparison of this study's combination of effects for organic matter and to literature.

2 - Bedrock not shown nor tested in this study, but showed no relationship with pCu in cover, though observed with richness. Bedrock runoff is high as on slope soils and remedies unlikely to be effective.

3 - Recorded as minor if uncertain or observed as minor (Table 16).

4 - Lime and organic matter combined (with no tilling) did not significantly change pH, so organic matter alone was assumed not to change pH (Table 9)

Table 19a
Before-After-Control-Impact (BACI) Means and Standard Errors - Copper, pCu, and Soluble Copper Without Less-Collocated plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Analyte by BACI Level	Mean Estimate[1]	Standard Error	95% Confidence Interval	
			Lower	Upper
Cu in mg/kg (till = add tilling)				
pre till Amendment	1,550	343	872	2228
post till Amendment	976	147	685	1266
pre Reference	2,767	485	1808	3725
post Reference	2,445	208	2034	2857
pCu (till = add tilling)				
pre till Amendment	4.46	0.64	3.19	5.73
post till Amendment	5.82	0.31	5.20	6.43
pre Reference	3.51	0.89	1.75	5.26
post Reference	3.58	0.44	2.72	4.45
Soluble Copper by SPLP[2] (till = add tilling)				
pre till Amendment	0.09	2.09	0.02	0.38
post till Amendment	0.21	1.30	0.12	0.36
pre Reference	0.14	2.56	0.02	0.89
post Reference	0.72	1.38	0.38	1.37

Notes:

1- average of the average of categories (by plot type and sampling period), called least square mean. Post-treatment mean is based on all 5 years post-treatment.

2 - Log transformed means (and 5:1 dilution) were used with standard errors and confidence intervals; means are back-transformed to original units.

BACI is a mixed model ANOVA with fixed factors of planned treatment of plot (reference vs. amendment plot) and time period (before and after treatment) and random factors of plot location and sampling period.

Excludes white rain effect (no 2006 data)
till - plot that either will be or has been tilled (North and East Amendment plots)
Amendment - plots that were either limed or tilled.
Reference = northeast amendment plot

ANOVA = Analysis of Variance with Post-hoc Tukey's HSD test used to obtain 95% confidence intervals on least squares means

Least square means are the average of the average values of the ANOVA categories by plot type and sampling period within the effect level of interest.

Cu = copper pCu = cupric iron activity

Table19b
Before-After-Control-Impact (BACI) Mixed Model ANOVA Test Results - Copper, pCu and Soluble Copper Without Less-Collocated plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Effect Level	Numerator df	Denominator df	F-Ratio	P-Value
Cu in mg/kg (till = add tilling)				
Pre- vs. Post-Tilling Period	1	9	2.56	0.14
Tilled vs. Untilled Plot	1	137	13.82	**0.0003**
Interaction term of (Pre vs. Post-Tilling Period) and (Tilled Plot vs. Untilled Plot)	1	137	0.20	0.65
pCu (till = add tilling)				
Pre- vs. Post-Tilling Period	1	9	2.32	0.16
Tilled vs. Untilled Plot	1	137	5.43	**0.02**
Interaction term of (Pre vs. Post-Tilling Period) and (Tilled Plot vs. Untilled Plot)	1	137	1.79	0.18
Soluble Copper by SPLP (till = add tilling)				
Pre- vs. Post-Tilling Period	1	5	3.16	0.14
Tilled vs. Untilled Plot	1	60	2.52	0.12
Interaction term of (Pre vs. Post-Tilling Period) and (Tilled Plot vs. Untilled Plot)	1	60	0.54	0.47

Notes:

BACI is a mixed model ANOVA with fixed factors of planned treatment of plot (reference vs. amendment plot) and time period (before and after treatment) and random factors of plot location and sampling period.

Bolded P values are significant at $P < 0.05$. *Italicized* P values are nearly significant ($P \leq 0.10$).

See Table 9a for means for each category of the ANOVA and 95 percent confidence intervals from the Tukey's HSD Post-hoc comparison test

Amendment - plots that were either limed or tilled.

Reference - never limed or tilled (West Amendment Plot with its reference plot was included in the reference plots, as it was never treated or tilled).

ANOVA = Analysis of Variance Cu = copper pCu = cupric ion activity mg/kg = milligrams per kilogram

Table 20
Mixed Model ANOVA[1] on Copper and pCu without Reference plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Analyte by Level	Mean Estimate Before	Mean Estimate After	P-value
Cu in mg/kg (L= add lime and organic matter) - Comparison to one sampling event after application (6 months later)			
Mean copper	1,956	1,661	0.48
pCu in mg/kg (L= add lime and organic matter) - Comparison to one sampling event after application (6 months later)			
Mean pCu	4.14	4.24	0.91
Cu in mg/kg (L= add lime and organic matter) - Comparison to two sampling events after application (1.5 years later)			
Mean copper	1,956	1,690	0.45
pCu in mg/kg (L= add lime and organic matter) - Comparison to two sampling events after application (1.5 years later)			
Mean pCu	4.14	4.59	0.46
Cu in mg/kg (L= add lime and organic matter) - Comparison to all 5 years after application			
Mean copper	1,956	1,466	*0.064*
pCu in mg/kg (L= add lime and organic matter) - Comparison to all 5 years after application			
Mean pCu	4.14	5.07	*0.095*

Notes:

1- Plot is random factor and sampling period is random factor when analyzed for all years.

Excludes white rain effect (no 2006 data)

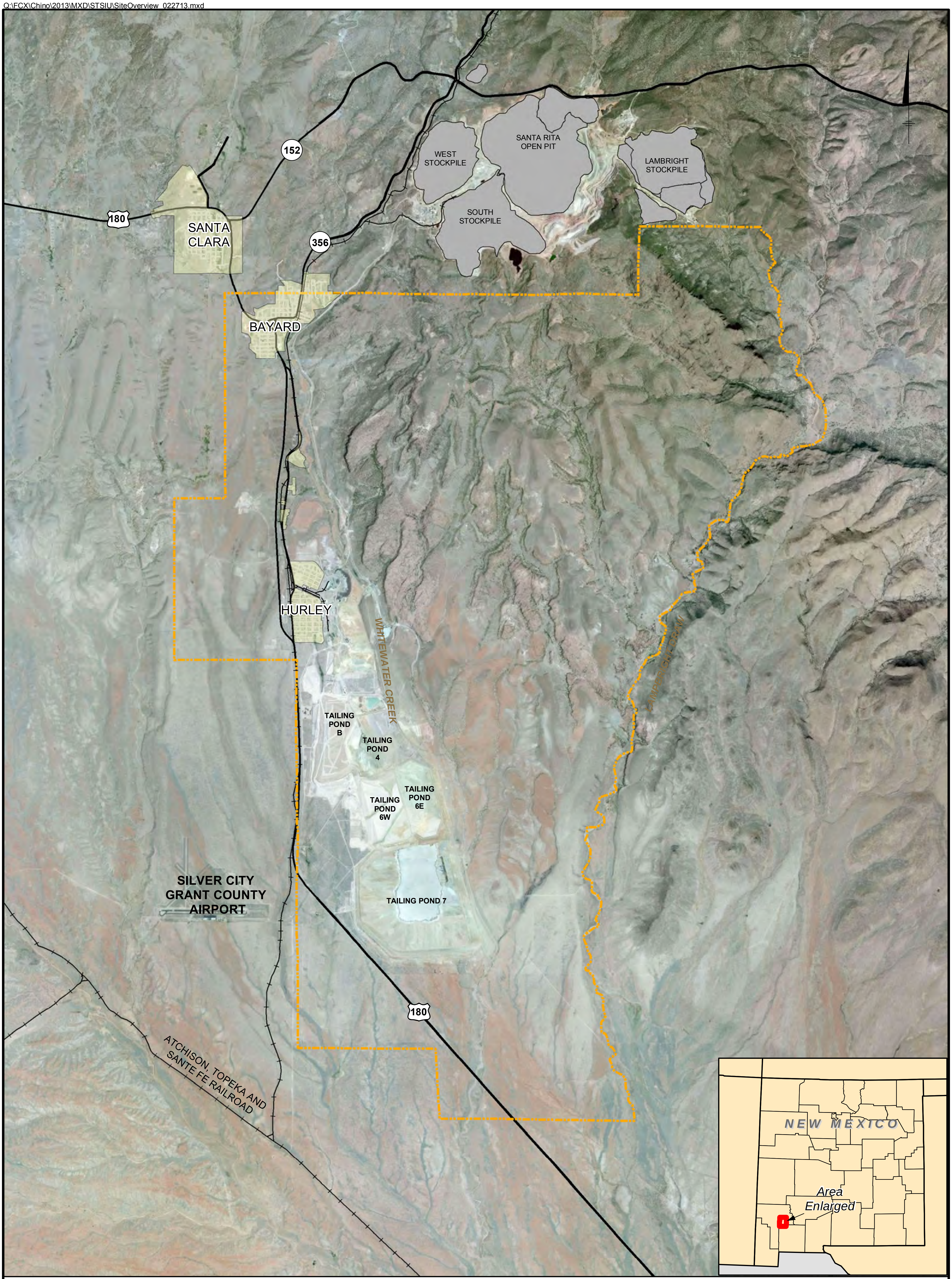
Amendment plots only were included, that were either limed or tilled. No reference plots were included.

ANOVA = Analysis of Variance with Post-hoc Tukey's HSD test used to obtain 95% confidence intervals on least squares means level of interest.

Cu = copper pCu = cupric iron activity

Figures

OFFICE: LAKEWOOD DB: MLM TM: MB PM: AT
PROJECT# B0063543.0000
Q:\FCX\Chino\2013\MXD\STSIU\SiteOverview_022713.mxd



LEGEND

▭	City Areas	—	Major Roads
⬚	STSIU Boundary	—+—	Railroad
▩	Stockpiles	—	Town Roads

0 1 2 Miles
GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT - AMENDMENT STUDY PLOTS

SITE OVERVIEW

ARCADIS

FIGURE
1

OFFICE: LAKEWOOD DB: MLM TM: MB
FREEPORT-MCMORAN, CHINO MINES (B0063543.0000)
Q:\FCX\CHINO\2013\MXD\PH_MONITORING\AMMENDMENTPLOTSOVERVIEW_022713.MXD

LEGEND:

- 🟨 CITY AREA
- ▭ AMENDMENT AREAS
- - · - AOC BOUNDARY
- — DRAINAGE
- — TOWN ROADS

Note:
North and Northeast amendment and reference plots were moved in May and June 2008 due to slope and erosion problems, just prior to amendment applications, and are called Post-Amendment plots. The original plots are called Baseline plots. Baseline data (prior to amendment) were not collected on the Post-Amendment plots except for soil data on the Northeast plot.

0 1,000 2,000 Feet
GRAPHIC SCALE

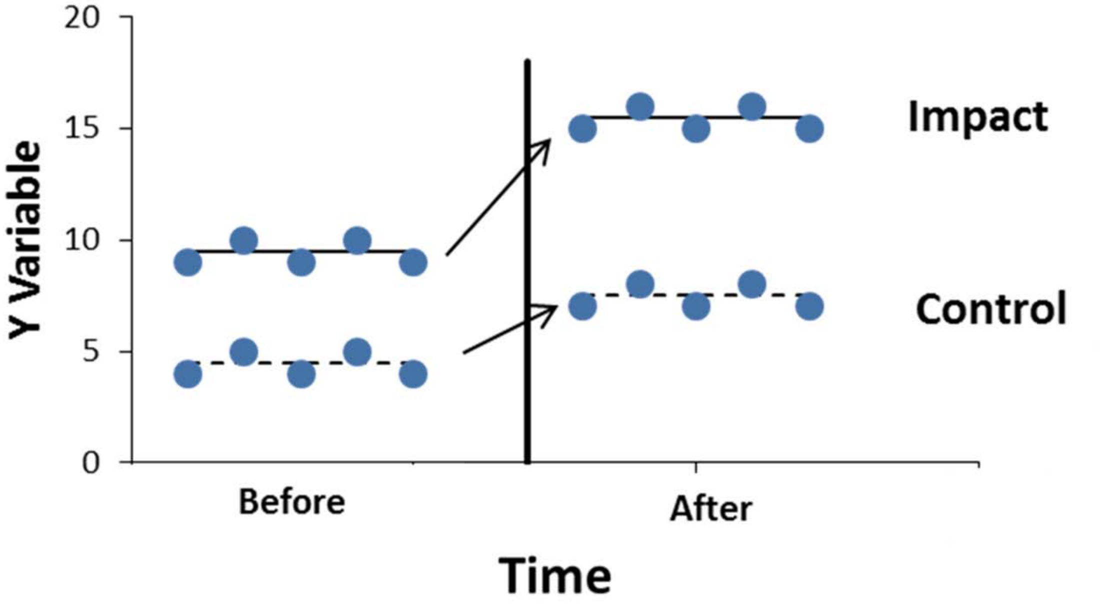
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT - AMENDMENT STUDY PLOTS

MONITORING LOCATIONS

ARCADIS

FIGURE
2



Note: The arrows are not parallel ,and thus the average values of the control and impact locations have changed differently through time, indicating the treatment caused a difference when compared to the control (if significant interaction term in analysis of variance [ANOVA], this difference is significant).

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

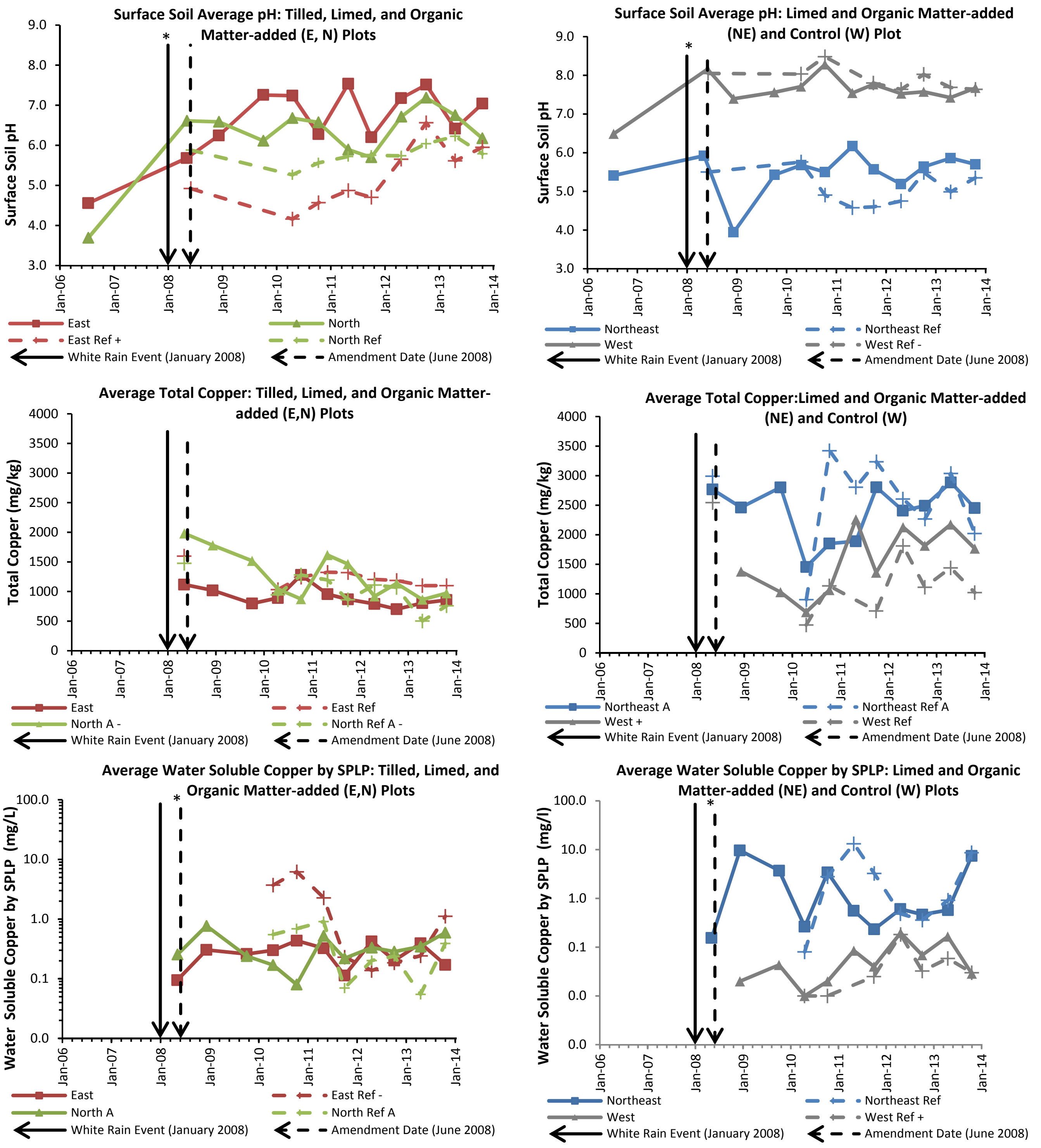
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Schematic of Before-After-Control-Impact Study Design and Analysis

ARCADIS

FIGURE

3



Notes: The letter "A" next to a plot location in the figure legend indicates there is no significant difference between the paired amendment and reference plots. The symbol + or - next the legend plot location indicates trend post-amendment since December 2008 for amendment plots and since 2010 for reference plots is significantly increasing or decreasing, respectively (only events with 5:1 method tested statistically for SPLP, which are up to April 2011 plus October 2013). The asterisk above the white rain or amendment date arrow indicates the event caused a significant change based on BACI or ANOVA analysis. The significance of the amendment does not apply to the untreated west plots. Points not connected by a line are estimated.
The May/June 2008 mean pH was calculated using average of soil laboratory and field pH data. The field pH data are located in Appendix A-1.

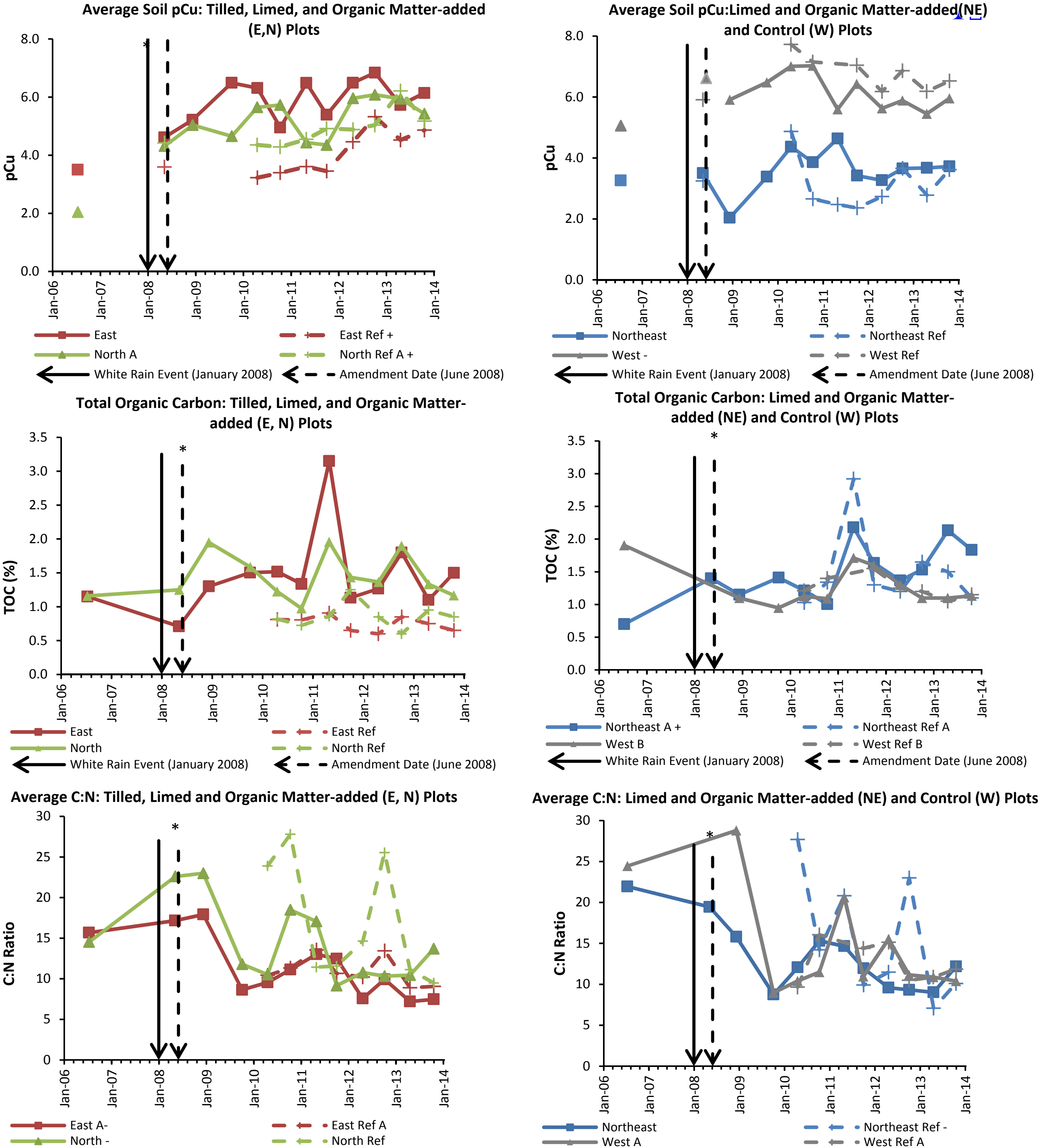
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Surface Soil pH, Total Copper and Soluble Copper in Amendment and Reference Plots over Time

ARCADIS

FIGURE
4a



Notes: The letter “A” next to a plot location in the figure legend indicates there is no significant difference between the paired amendment and reference plots from 2010 on. The symbol + or - next the legend plot location indicates trend post-amendment, since December 2008 for amendment plots and since 2010 for reference plots, is significantly increasing or decreasing, respectively. The asterisk above the white rain or amendment date arrow indicates the event caused a significant or near significant change based on BACI or ANOVA analysis. The significance of the amendment does not apply to the untreated west plots. Organic matter added in northeast plot was highest (72 t/ac), moderate in East (47 t/ac) and lowest in North (24 t/ac) plot. Points not connected by a line are estimated.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

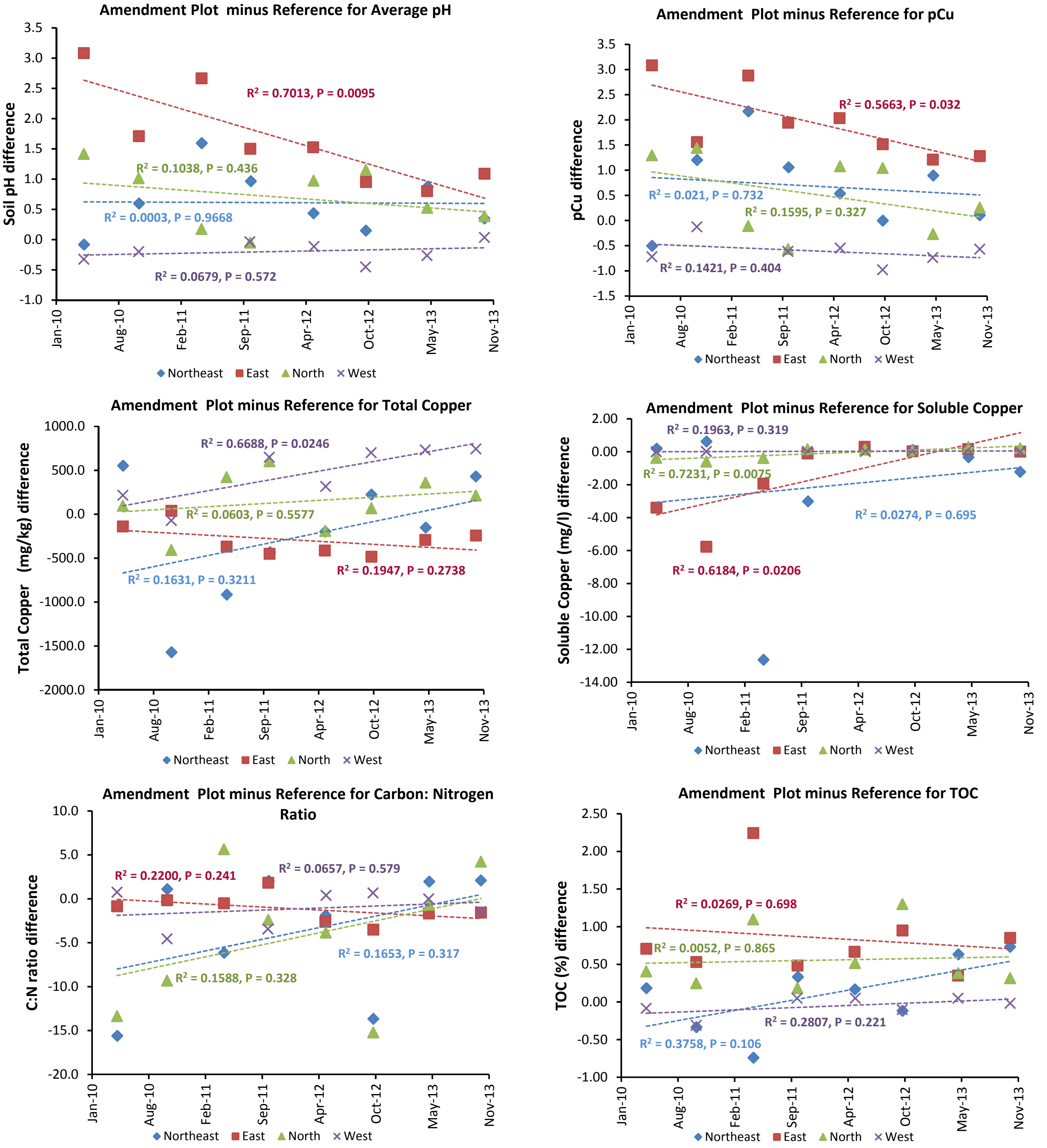
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Surface Soil pCu, Total Organic Carbon (TOC), and Carbon: Nitrogen Ratio (C:N) in Amendment and Reference Plots over Time

ARCADIS

FIGURE

4b



Notes: If regression lines do not have significant slopes (different from 0) as indicated by P value > 0.05, then the initial amendment/tilling effect, if present, is not changing (appears persistent). However, if the regression line is near or approaching zero, then treatment in amendment plot may not have made a difference in the parameter if adjacent plots were similar before treatment. **Figures 4a** & **4b** or **Table 9** must be checked to interpret if reference areas started out with a large difference from amendment plots before the treatment , which may have diminished to near zero following the treatment (which could mean treatment was effective even if difference near zero). When the West plot (both plots are untreated) mean difference is not zero (e.g., for copper), it suggests high spatial variability in the parameter and not to rely on zero difference as meaning no effect. Difference data unavailable for 2008-09.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

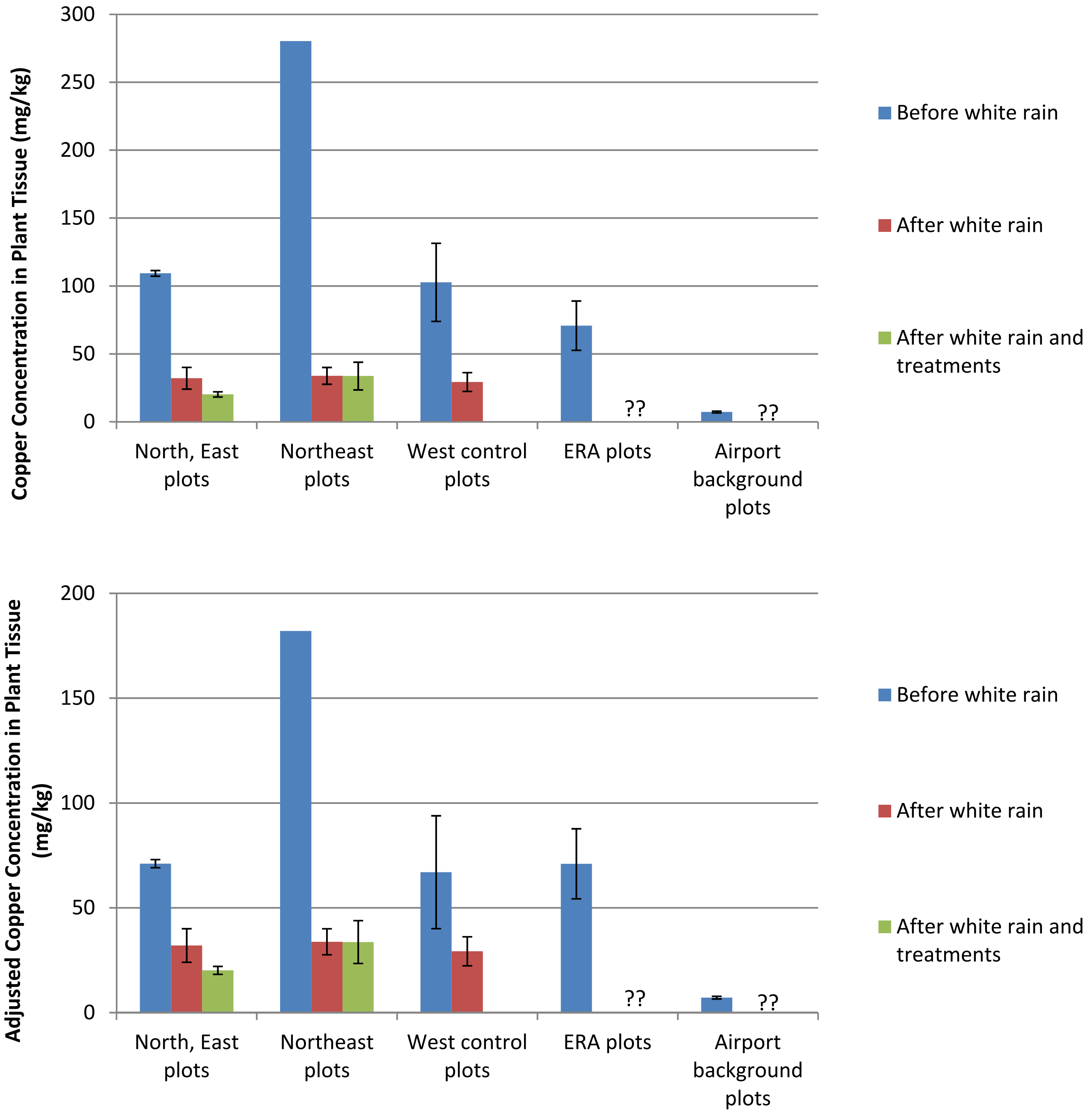
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Mean Differences for Surface Soil Parameters in Amendment and Reference Plots over Time - Post-Amendment Application starting in 2010

ARCADIS

FIGURE

5



Note: All data are means (± 1 SE) washed (post-white rain data) or adjusted to washed (pre-white rain data). Top graph is unadjusted for dormancy bias; Bottom graph is adjusted downward by 35% for dormancy bias. Before white rain (blue) are amendment plots (North, East, Northeast, West in March 2008), ERA plots (1999) with pH < 5.5 and airport background plots (1999). After white rain (red) are reference plots (North, East, Northeast, West in October 2013). After white rain and treatments (green) are amendment plots (North, East, Northeast in October 2013). North and East plots were amended and tilled. Northeast plot has only one composite sample and therefore no standard error bars and was not tilled. West plots are reference plots.

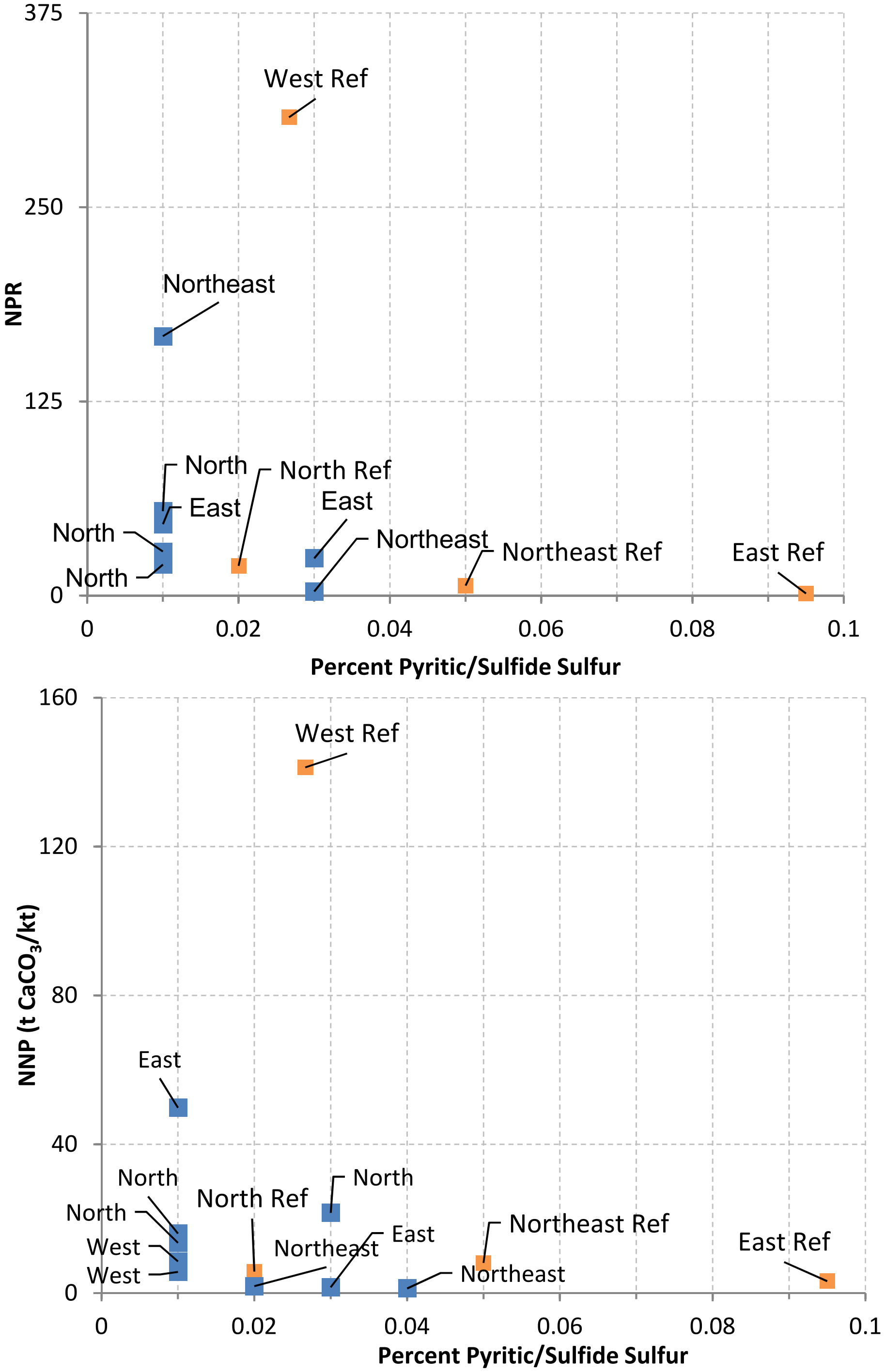
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Comparison of Changes over Time in Copper Concentration in Plant Tissue after White Rain and Treatments (Amendments and/or Tilling)

ARCADIS

FIGURE
6



Note: Average Net Neutralization Potential (NNP) and Neutralization Potential Ratio (NPR) as a function of pyritic/sulfide sulfur are from surface samples from amendment plots (collected in December 2008) and reference plots (collected annually from 2010 through 2013).

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VANADIUM, NEW MEXICO

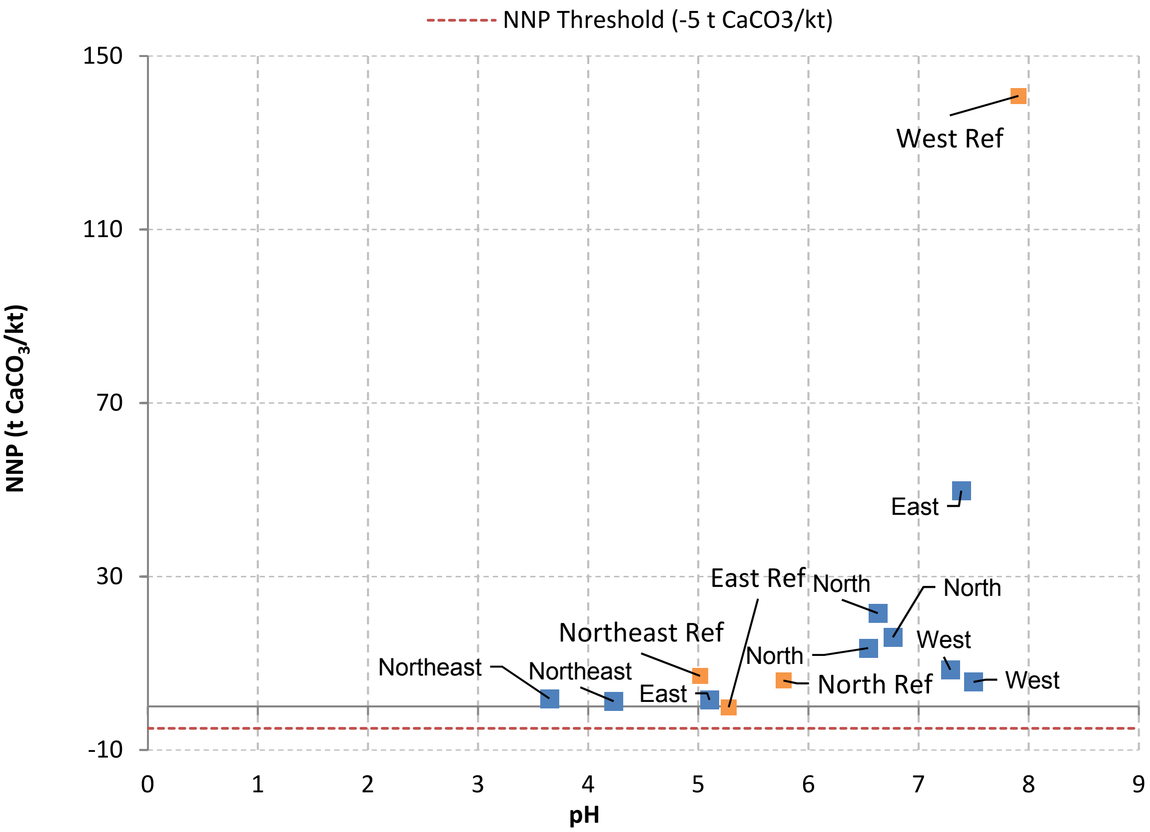
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Net Neutralization Potential and Neutralization Potential Ratio as a Function of Pyritic/Sulfide Sulfur

ARCADIS

FIGURE

7a



Note: Average Net Neutralization Potential (NNP) as a function of pH are from surface samples from amendment plots (collected in December 2008) and reference plots (collected annually from 2010 through 2013).

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

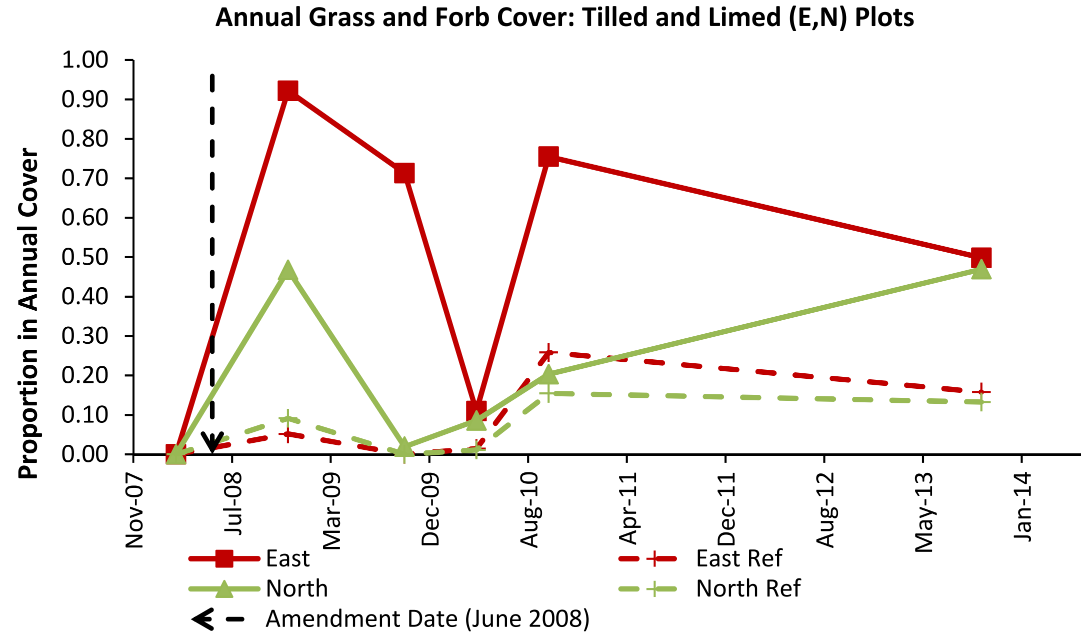
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

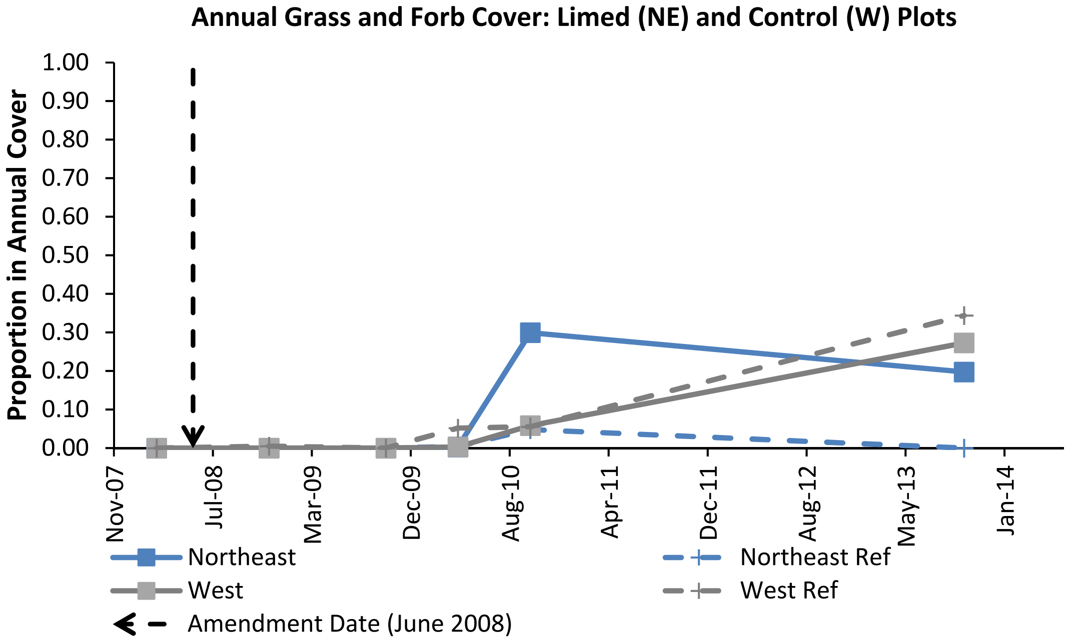
Net Neutralization Potential as a Function of pH

ARCADIS

FIGURE

7b





Note: East amendment plot had *Setaria* sp. present, which may be a perennial or annual, but was not identified to species. For this analysis, it was assumed to be a perennial.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

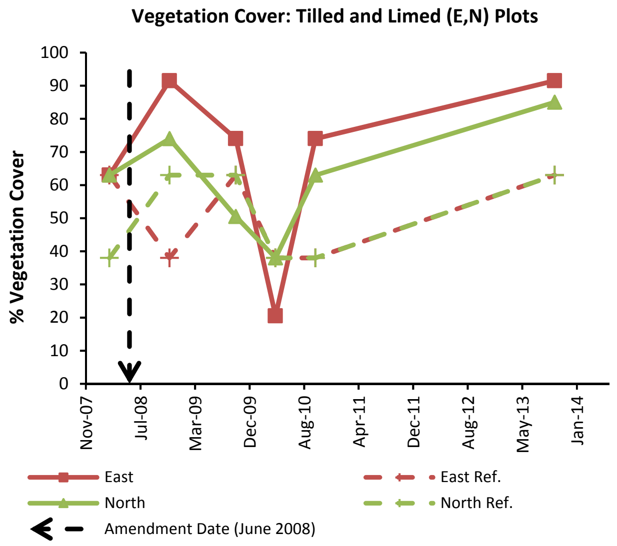
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

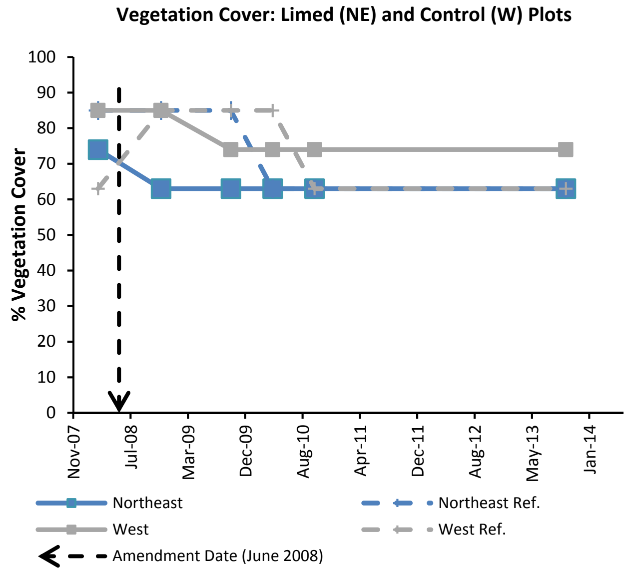
Proportion of Vegetation in Annual Forbs and Grasses for Amendment and Reference Plots over Time

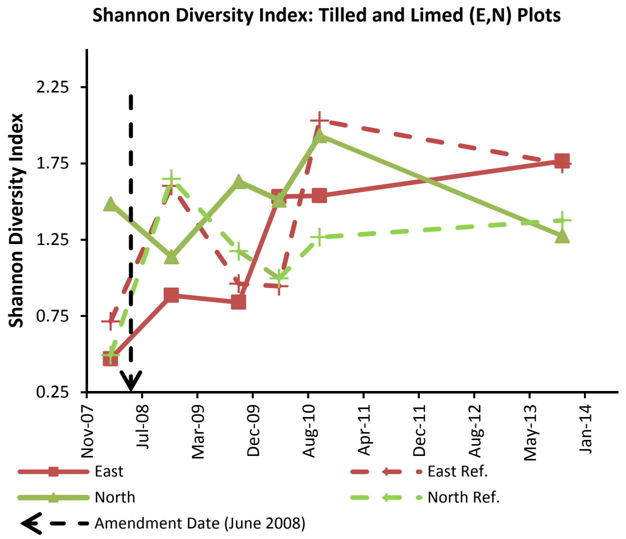
ARCADIS

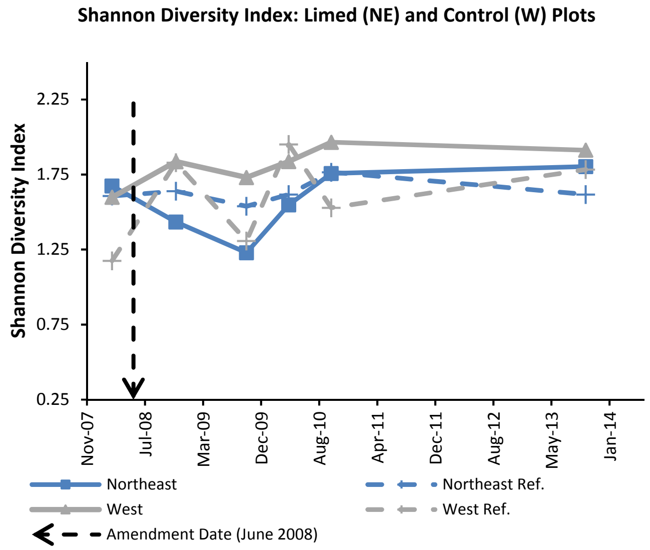
FIGURE

8









Note: Pre-amendment sampling (before arrow) in March 2008 and post-amendment sampling in April 2010 represent late winter/early spring sampling compared to the other sampling events which were in the fall during/just after the growing season. Cover tends to be much higher in the fall than spring and this must be accounted for when evaluating trends in the above graphs.

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VANADIUM, NEW MEXICO

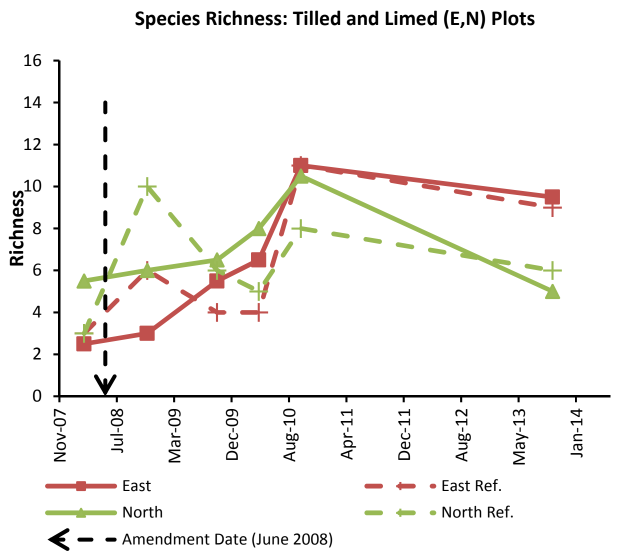
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

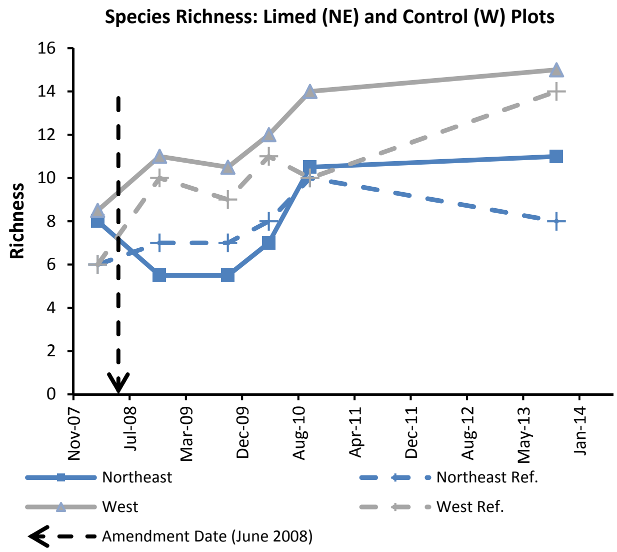
Percent Cover and Species Diversity for Amendment and Reference Plots over Time

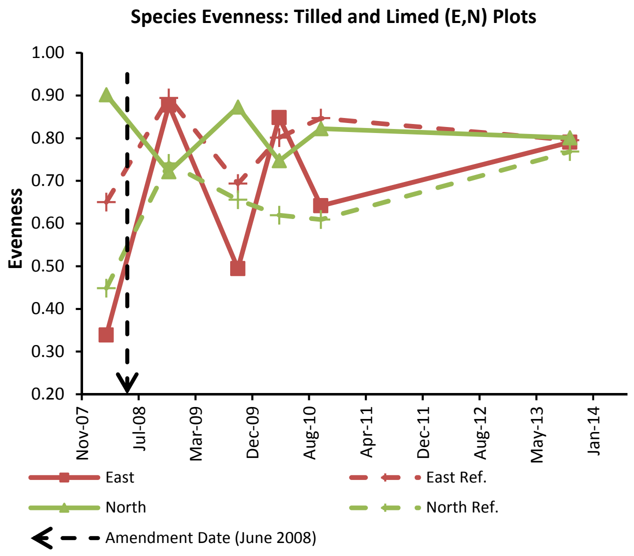
ARCADIS

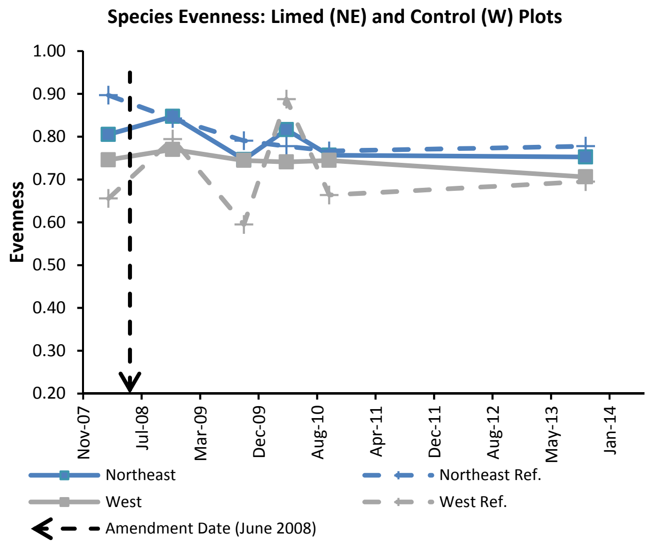
FIGURE

9a









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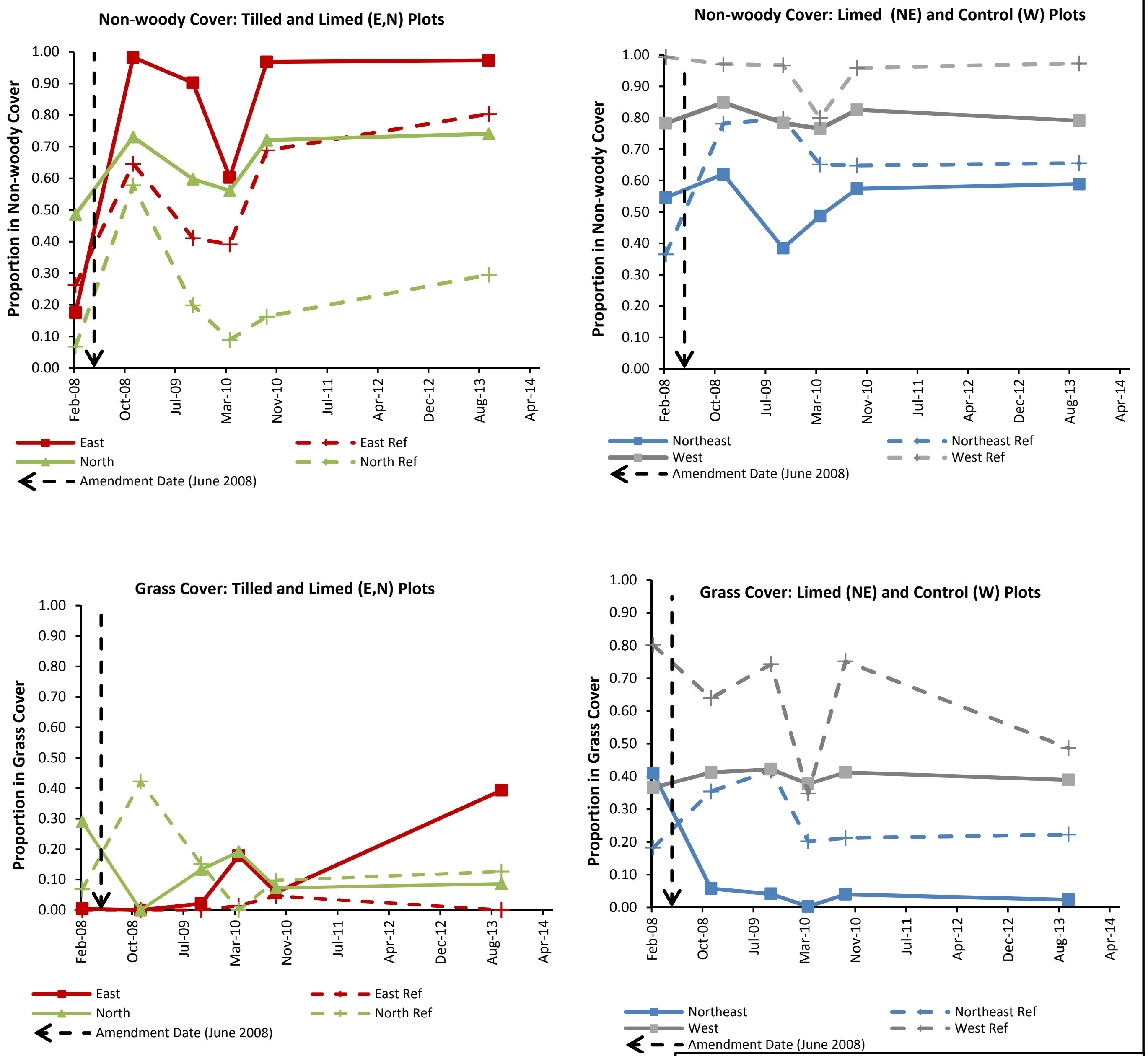
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Species Richness and Evenness for Amendment and Reference Plots over Time

ARCADIS

FIGURE
9b



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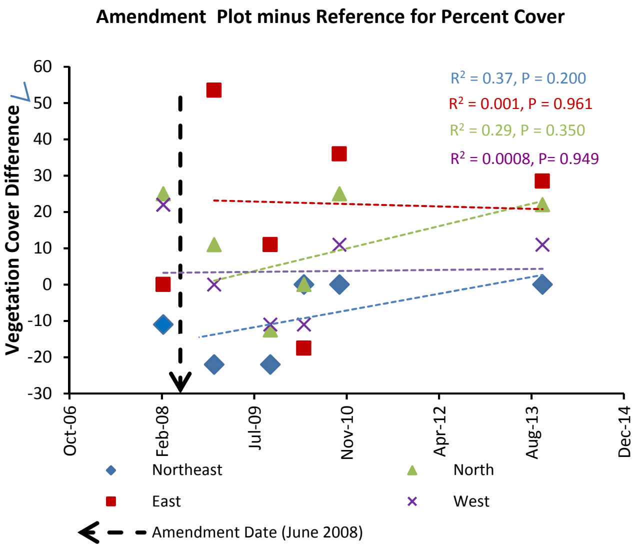
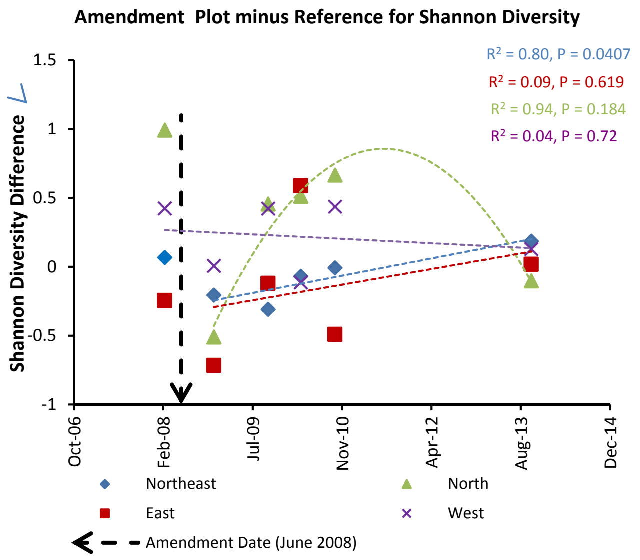
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

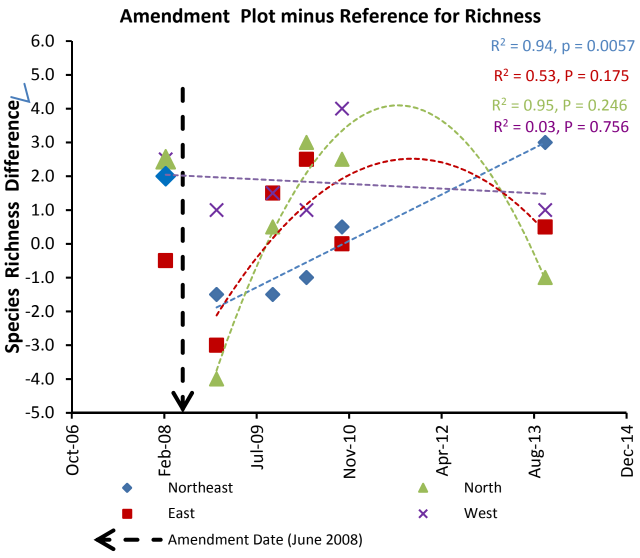
Proportion of Vegetation in Non-Woody and Grass Cover for Amendment and Reference Plots over Time

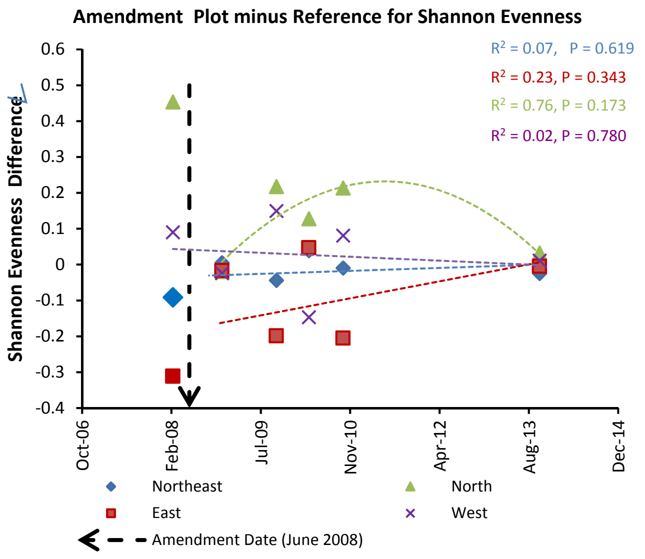
ARCADIS

FIGURE
10


Amendment Plot minus Reference for Percent Cover


Amendment Plot minus Reference for Shannon Diversity


Amendment Plot minus Reference for Richness


Amendment Plot minus Reference for Shannon Evenness

Notes: If the difference changes by a noticeable amount from before amendment application to after (statistics not possible to test if significant), particularly by October 2013 after 5 years of succession, then the treatment may have had an effect. Linear and quadratic curves are fit to the data post-amendment only (not pre-amendment) to evaluate the trend post-amendment. If these regression lines do not have significant slopes (different from 0) as indicated by P value > 0.05, then the initial amendment/tilling effect, if present, is not changing (appears to be persistent). However, if it is or approaches the same difference value as before the amendment, the treatment appears not to be effective (unless it recovers to former difference and then surpasses it by October 2013).

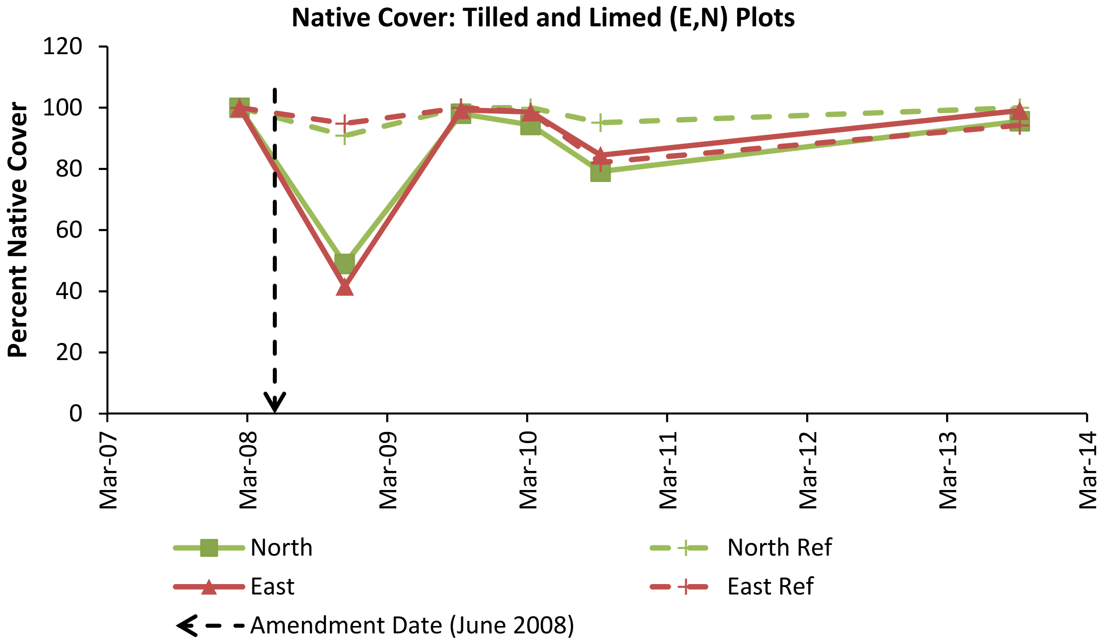
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

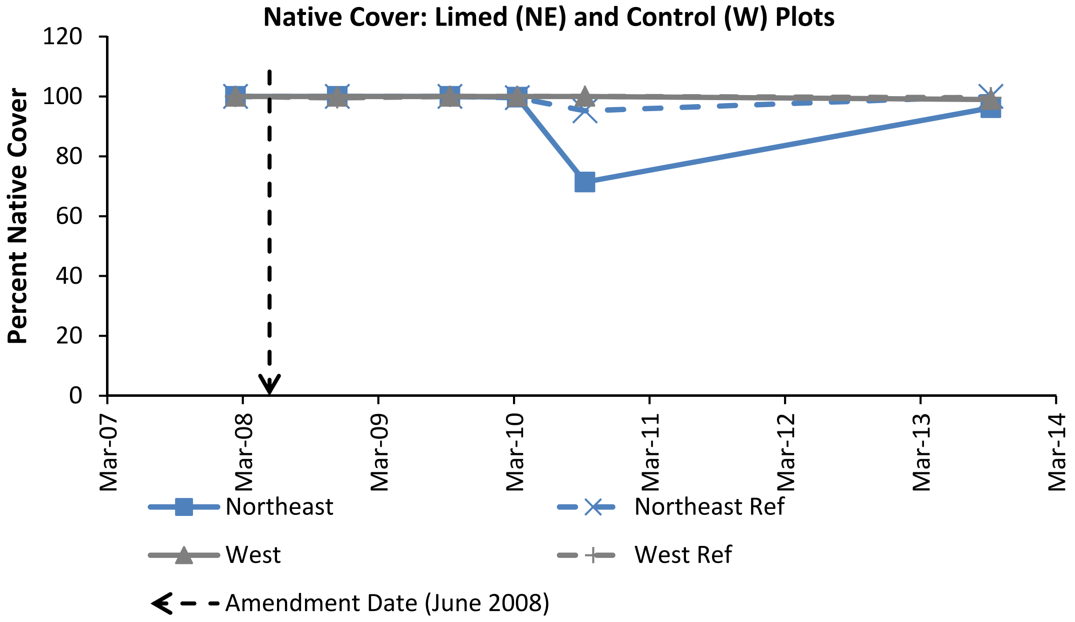
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Mean Difference in Vegetation Parameters (Cover, Richness, Evenness, and Diversity) between Amendment and Reference Plots over Time

ARCADIS

FIGURE
11





Note: East amendment plot had *Setaria* sp. present, which may be a native or non-native species, but was not identified to species. For this analysis, it was assumed to be a native species.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

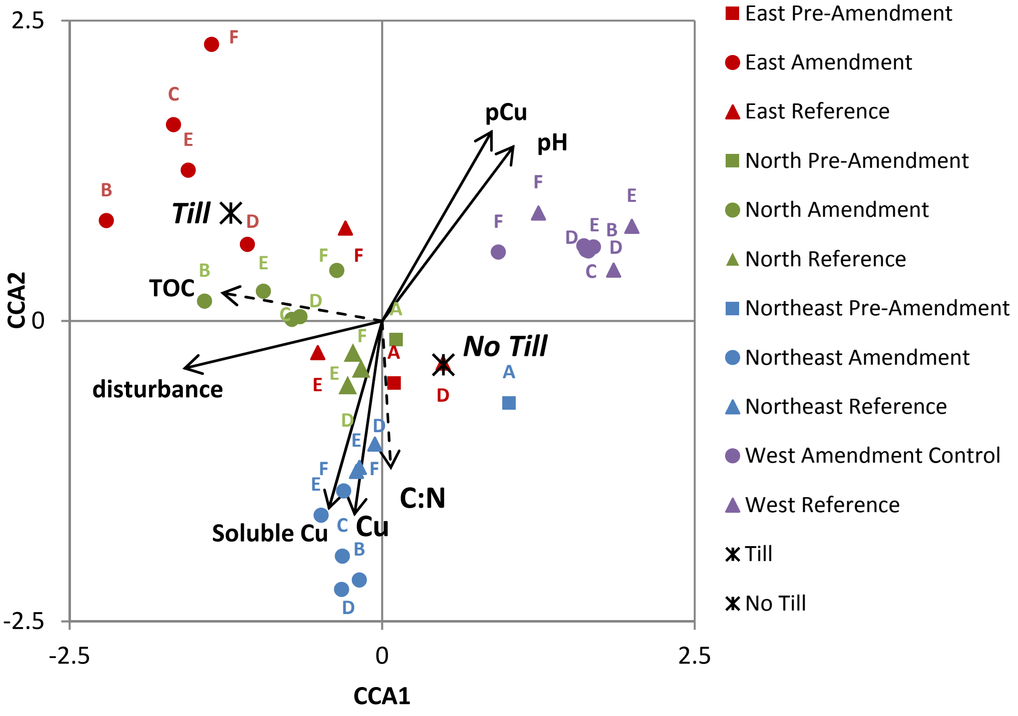
Percent of Native Vegetative Cover for Amendment and Reference Plots over Time

ARCADIS

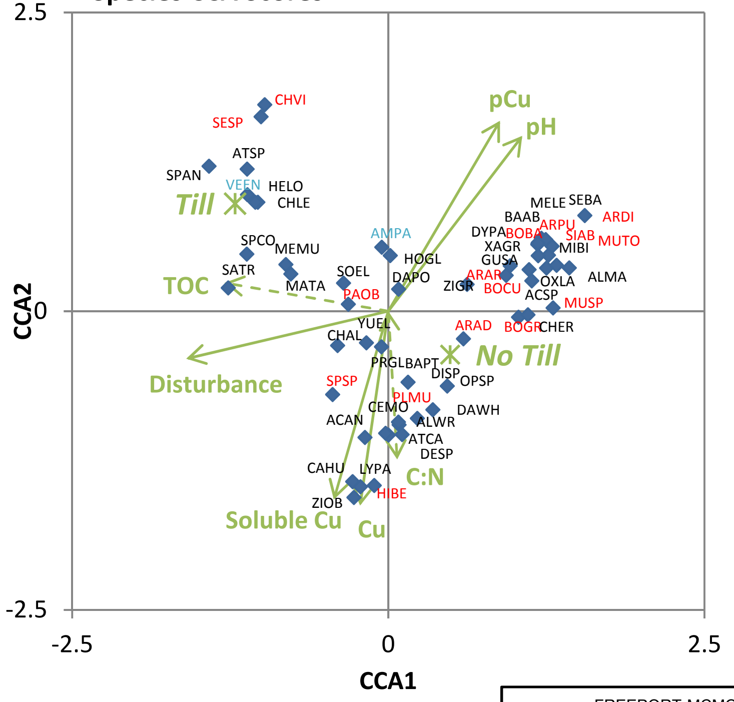
FIGURE

12

Sampling Event CCA Scores



Species CCA Scores



Notes: CCA scores species or sampling events by location on two CCA axes that explain variation in species and environmental variables. The letters in the top figure represent time, where A is pre-amendment, B through F is in order from just after amendment in December 2008 to the last sampling event in Oct 2013 (see Appendix B-8 for dates/data). The four letter species codes shown in the bottom figure can be found in Appendix B-9. The species codes shown in red denote a grass species. The species with blue letters are potentially toxic annuals. The dashed vectors are not significantly correlated to the ordination (all axes combined).

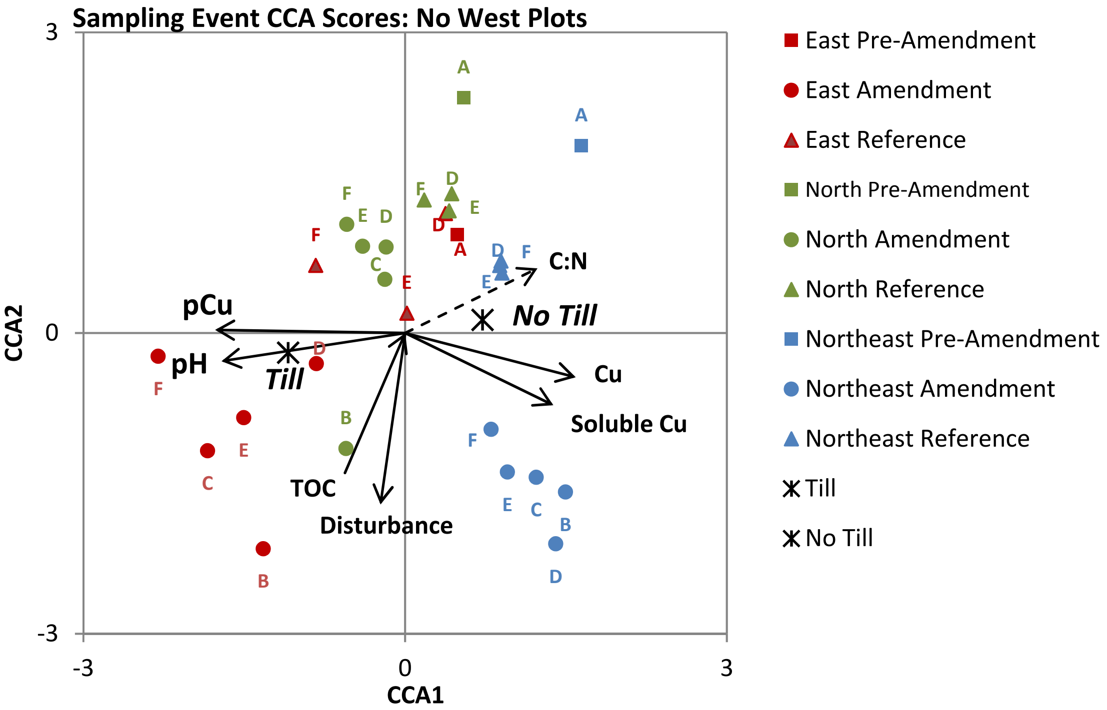
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

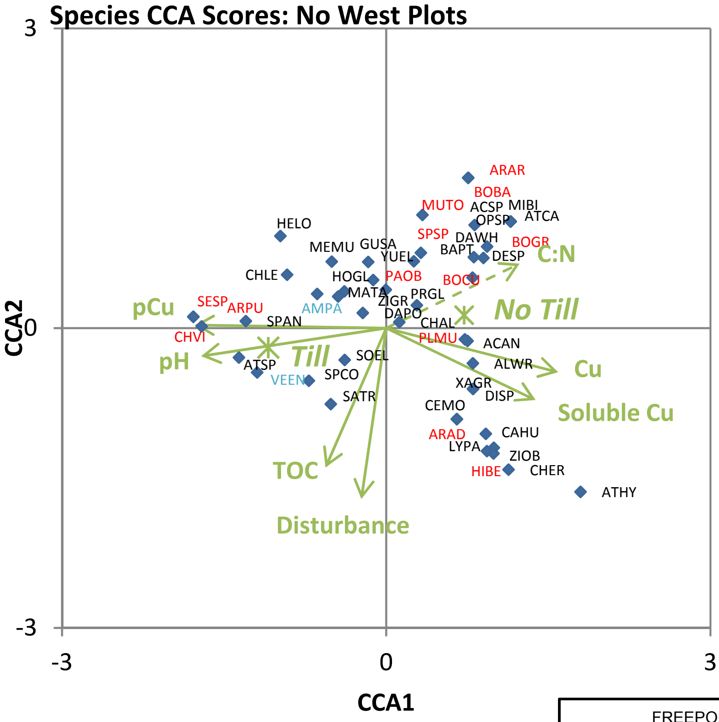
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Canonical Correspondence Analysis (CCA) of Species Composition and Soil Chemistry on Amendment and Reference Plots – All Plots

ARCADIS

FIGURE
13a





Notes: CCA scores species or sampling events by location on two CCA axes that explain variation in species and environmental variables. The letters in the top figure represent time, where A is pre-amendment, B through F is in order from just after amendment in December 2008 to the last sampling event in Oct 2013 (see Appendix B-8 for dates/data). The four letter species codes shown in the bottom figure can be found in Appendix B-9. The species codes shown in red denote a grass species. The species with blue letters are potentially toxic annuals. The dashed vectors are not significantly correlated to the ordination (all axes combined).

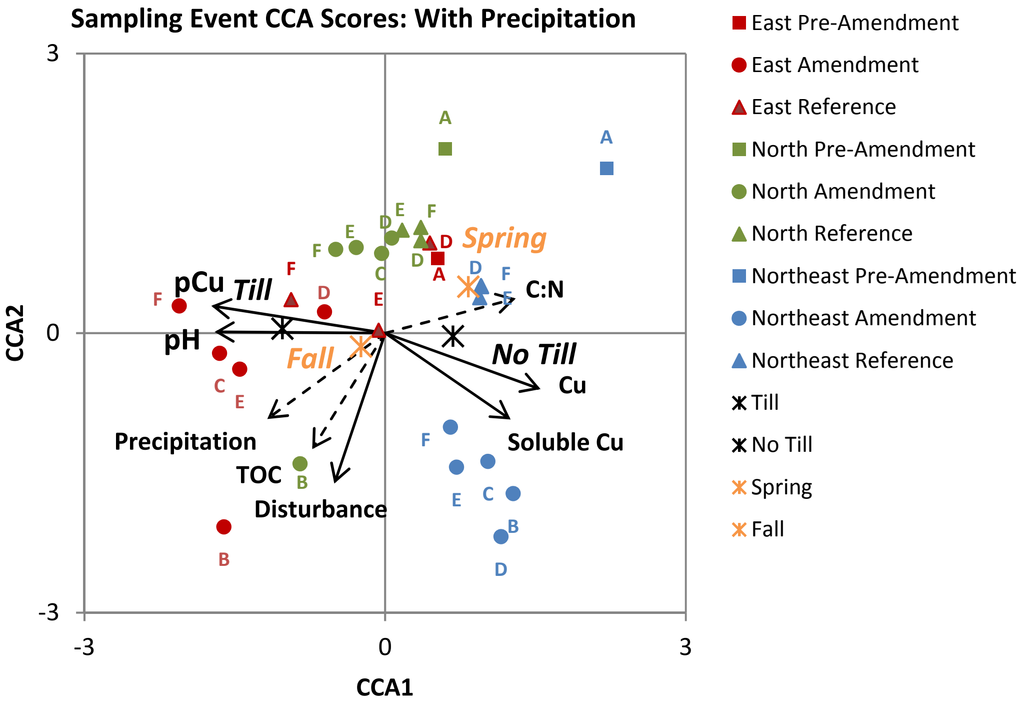
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

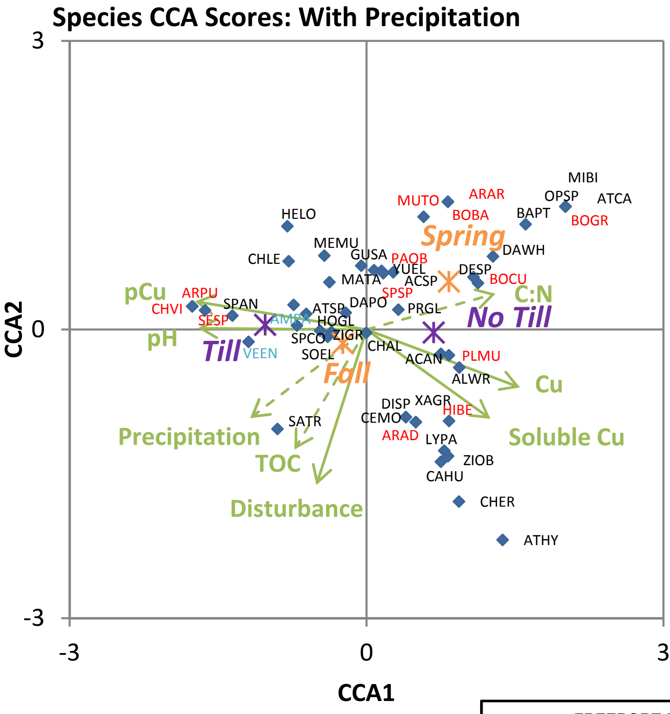
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Canonical Correspondence Analysis (CCA) of Species Composition and Soil Chemistry on Amendment and Reference Plots – Excludes West Plots

ARCADIS

FIGURE
13b





Notes: CCA scores species or sampling events by location on two CCA axes that explain variation in species and environmental variables. The letters in the top figure represent time, where A is pre-amendment, B through F is in order from just after amendment in December 2008 to the last sampling event in Oct 2013 (see Appendix B-8 for dates/data). The four letter species codes shown in the bottom figure can be found in Appendix B-9. The species codes shown in red denote a grass species. The species with blue letters are potentially toxic annuals. The solid vectors represent environmental variables that are significantly correlated with the ordination. The dashed vectors are not significantly correlated (though 0.05 ≤ P ≤ 0.1 for precipitation, season, TOC) to the ordination (all axes combined).

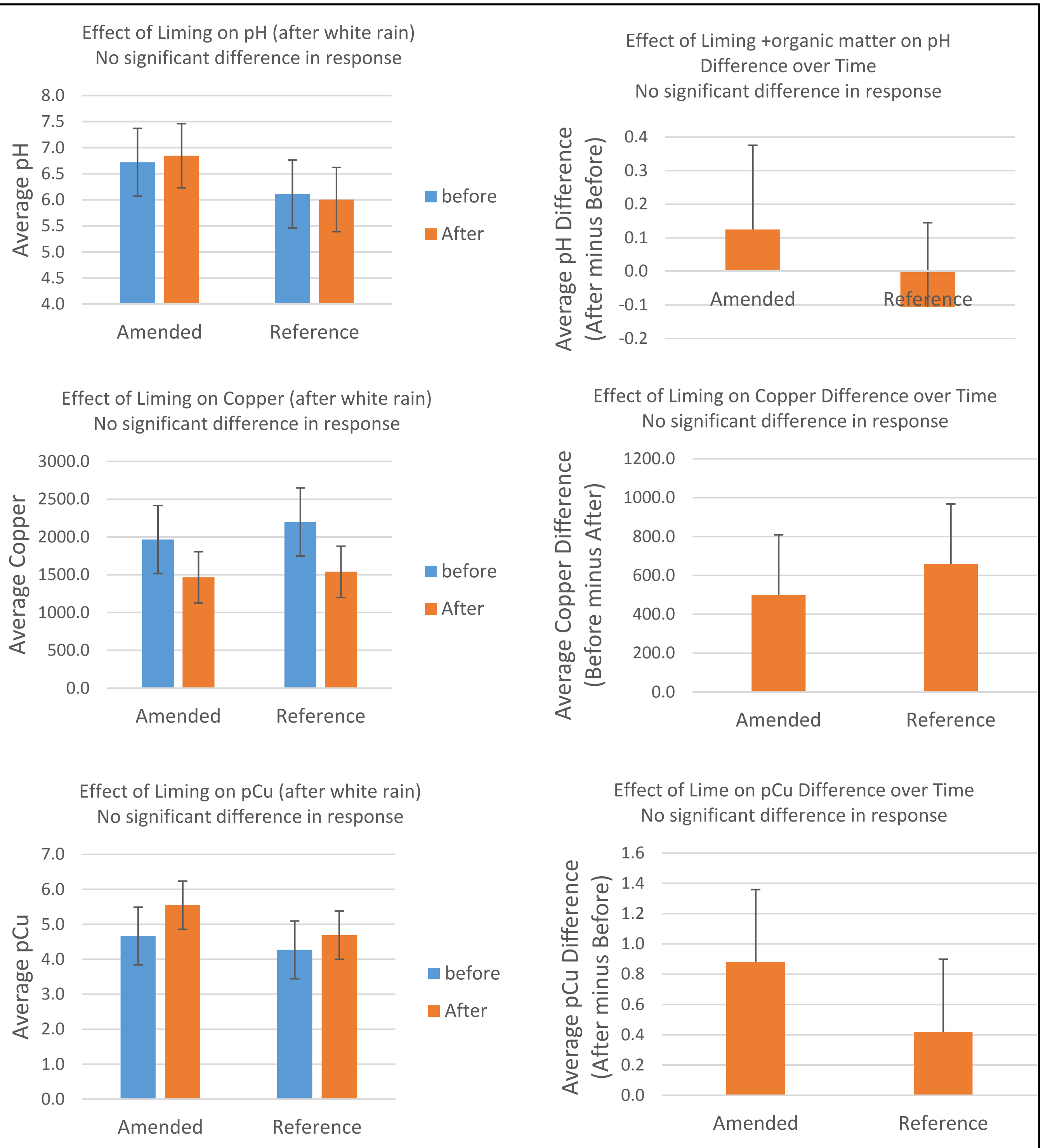
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Canonical Correspondence Analysis (CCA) of Species Composition and Soil Chemistry on Amendment and Reference Plots with Precipitation and Season – Excludes West Plots

ARCADIS

FIGURE
13c



Notes:
1. Left graph shows least square means as averages with standard error bars
2. Right graph shows difference between least square means before and after treatment periods for the amendment and reference plots.
3. Liming includes organic matter application and two of the three plots were also tilled.

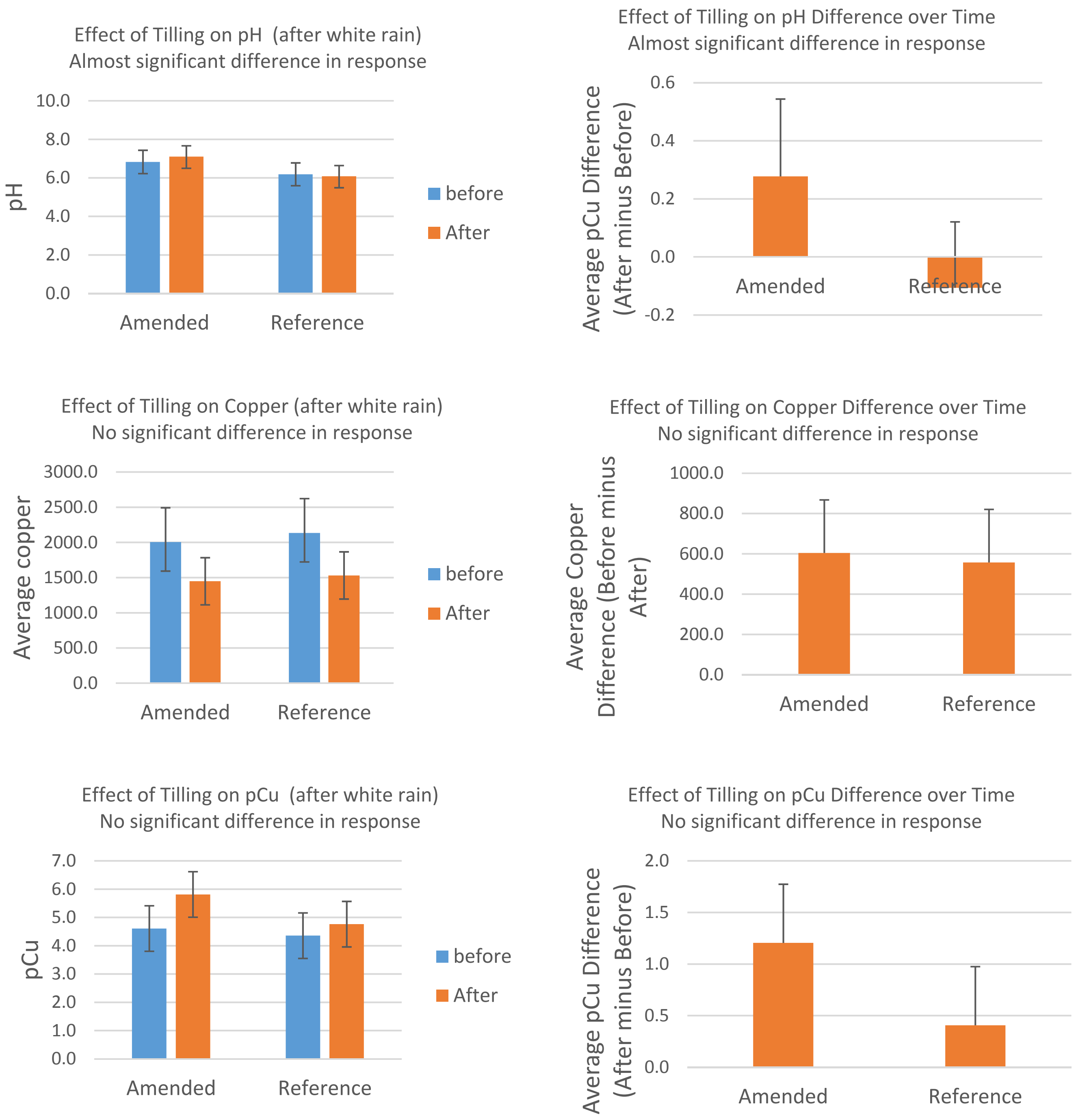
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Change in Soil pH, copper, and pCu before and after amending with lime and organic matter

ARCADIS

FIGURE
14



Effect of Tilling on pH (after white rain)
Almost significant difference in response

Effect of Tilling on pH Difference over Time
Almost significant difference in response

Effect of Tilling on Copper (after white rain)
No significant difference in response

Effect of Tilling on Copper Difference over Time
No significant difference in response

Effect of Tilling on pCu (after white rain)
No significant difference in response

Effect of Tilling on pCu Difference over Time
No significant difference in response

Notes:
1. Left graph shows least square means as averages with standard error bars
2. Right graph shows difference between least square means before and after treatment periods for the amendment and reference plots.
3. Tilling occurred in two plots that also had lime and organic matter applied when tilled.

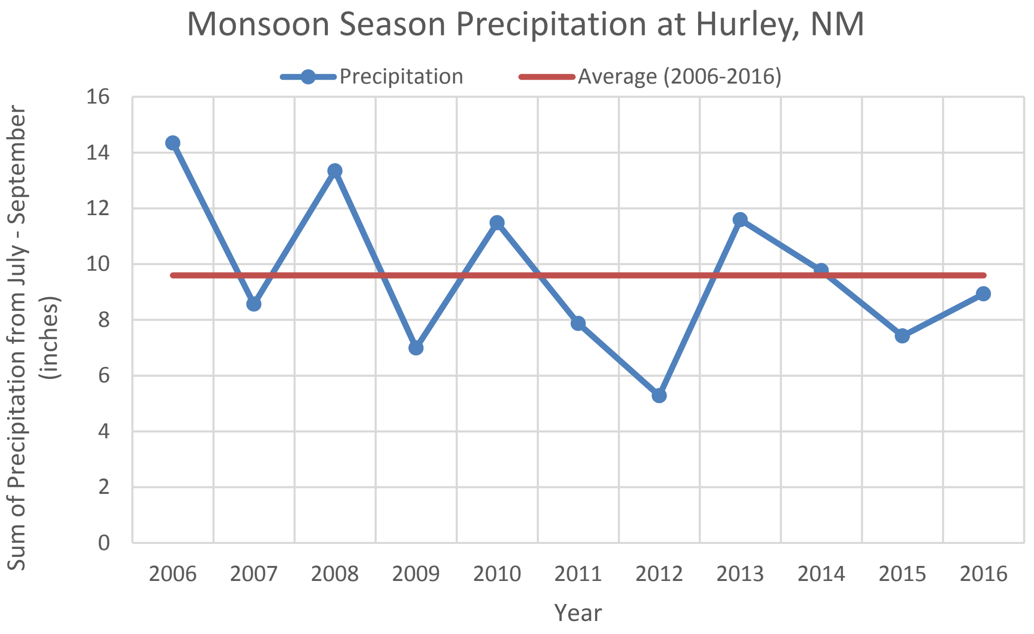
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

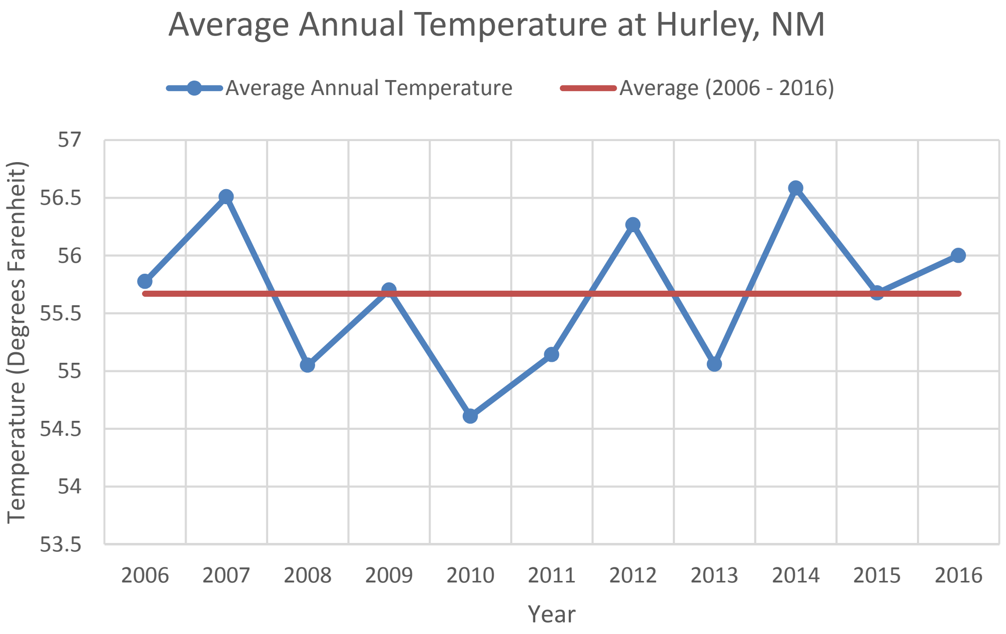
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Change in Soil pH, copper, and pCu before and after tilling (plus amending with lime and organic matter)

ARCADIS

FIGURE
15





Notes:
1. Total Monsoon Season Precipitation includes all rainfall from July through September.
2. Climate data obtained from the Prism Climate Mapping Program (PRISM Climate Group 2004). Accessed 3/14/17.

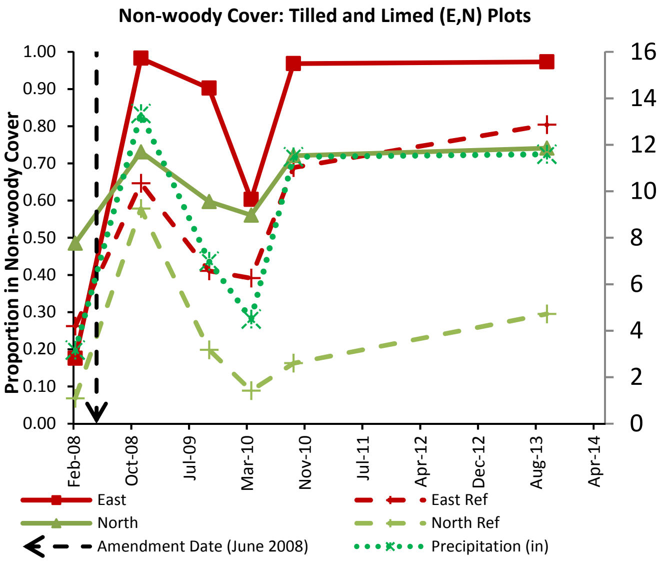
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

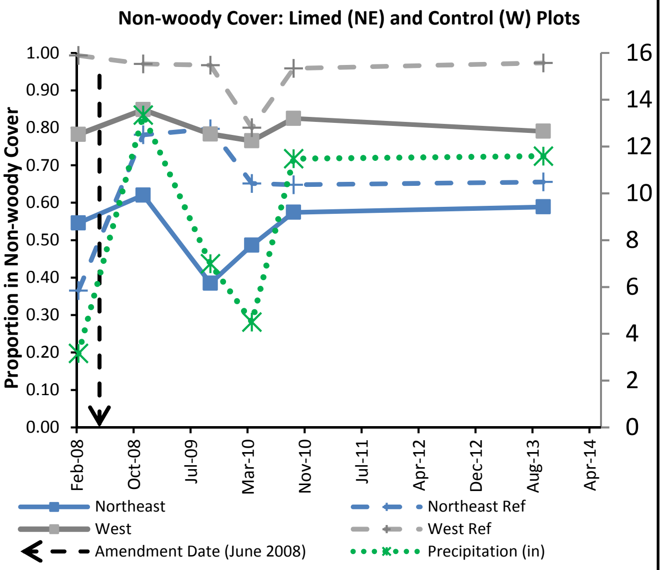
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Total Monsoon Season Precipitation and Average Annual Temperature at Hurley, New Mexico

ARCADIS

FIGURE
16





Notes: Precipitation is estimated at Hurley, NM in Prism database for the sum of the main monsoon season months (July to September) for fall sampling periods and for three months prior to the sampling period for spring season. Note that Figure 14 does not include the winter precipitation for spring sampling periods shown on this graph.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Proportion of Vegetation in Non-Woody and Grass Cover Compared to Precipitation

ARCADIS

FIGURE
17

Appendices

Appendix A

1997 Rangeland Condition Datasheets

AOC

Occular Reconnaisance

Growth Form	Species	Age Class (Shrub and Tree)	Dominance Rating	% Foliar Coverage	% Decadent/Dead	% Present	Sociability (1–5)	Utilization (SMH)
GS	MUTO2		5	2%	T	11%	2	
	BOCU		2	T		T		
	ARPU9		5	1%		9%	5	
	BOGR2		2	T		T		
	PAHA		24	T			3	
	BOBA3		1	T				
	BOER4		2	T				
	APAD		4	T			3	
	SELE6		3	T				
	ARAR6 ~~Aristida (p318)~~		5	1%		9%	3	
	MUEL Muhlenbergia (382)		2	T		T		
	ASPCR		2	T				
	DAPU7		3	T				
	HYTA		2	T			3	
forbs	PSTA		2	T				
	ASPA4		1	T				
	CRPOS		2	T				
	HAGRII		5	1%		9%	5	
Fk	SPLE Talinum (p400)		4	T		T	5	
	SIPH2		4	T			5	
	AMPA		5	1%		9%	5	
	MATA2		3	T		T		
	LEER		5	1%		9%	5	
	HOGL2		4	T		T	5	
	ASMO7		3					
	ZIPU		3					
	MEPU3		1					
	SAKA		3					
	CELA4		1					
	COAR4		2					
	HEAN3		1					
	VEEN		1					
	OXE06 ~~Unk (p.401)~~		2					
1/2S	GUSA2	-	5	1%		9%	5	—
	ATSEDO2		2	T		T		
S&T	PRGL2	◇	4	2%		11%	5	—
	YUEL		5	4%		22%	3	—
	ULPU		1	T		T		
	ATCA2		2	T				
	MIBI3		3	T				
Suc	CAVI6		1	T				
	OPMA2		34	T				

Observer CB
Date 10·2·97

SWA No. HW-168
Photo No. 2-19
Sect. 36 T 18S R 13W

Range Site Name(s) & %

Slope 8% Aspect W Elevation 5689'
Associated Sites HW-136, 136B, + 164/164
~~No grazing here?? (✓ grass spp)~~

CONDITION INDICATORS:

Preliminary Condition Class: E G [✓ F] P
Active Erosion: ~~Wind~~ ~~Pedestals~~ [✓ Sheet] Rill Gully
None [✓ Slight] Moderate Severe Very severe

Stand for Site: Full ¾ ½ ¼ 1/10
lb/acre:
Final Condition Class Rating:

OAT (30) Static
Past Disturbances ~~HW-136, 136B, + 164/164~~
Hiways/power lines/grazing

% CATEGORIES

Foliar Coverage	18%	Other	82%
Fern and Fern Allies	—	Bare soil	45%
Grass and Grass-like	6%	Litter	5%
Forbs	4%	Sand	2%
Half-shrubs	2	Gravel	20%
Shrubs/Trees	6%	Cobble/Stones	10%
Cacti	T	Boulder	T
		Exposed Bedrc	—
		Cryptograms	—

Ave. height of dominant, mature woody species (ft.)
PRGL2 = 4'
YUEL = 5-7'

FIELD NOTES:

- ~~Site has (perhaps) not been grazed, ✓ grass spp/vigor~~
- past use as horse corral; spp tends toward weedy further North
- site broken away from HW-136B because of high YUEL population, less MIBI3 observed here

QA Check
date: 10·27·97
init: AR

Geology N/A

Check appropriate box in each category which best fits area being observed. Points may vary within ea

	VIGOR (10 points)	Desirable grasses, forbs and shrubs are vigorous, showing good health. These plants have goo color and produce abundant herbage.
7	(6 points)	Desirable grasses, forbs and shrubs have moderate vigor. They are medium size with fair color and produce moderate amounts of herbage. Some seed stalks and seed heads are present.
	(2 points)	Desirable grasses, forbs and shrubs have low vigor. They appear unhealthy with small size and poor color. Portions of clumps or entire plants are dead or dying. Seed stalks and seed heads are non-existent except in protected areas.
	SEEDLINGS (10 points)	There is seedling establishment of desirable grasses, forbs and shrubs. Seedlings are present in open spaces between plants and along edges of soil pedestals. Few seedlings of invader or undesirable plants are present.
7	(6 points)	Some seedlings of desirable grasses, forbs and shrubs may or may not be present in open spaces between plants. Some seedlings of invader or undesirable plant species may or may not be present.
	(2 points)	Few if any seedlings of desirable grasses, forbs and shrubs are being established. Seedlings of invader or undesirable plants are present in open spaces between plants.
	SURFACE LITTER (5 points)	Surface litter is accumulating in place.
4	(3 points)	Moderate movement of surface litter is apparent and deposited against obstacles.
	(1 point)	Very little surface litter is remaining.
	PEDESTALS (5 points)	There is little visual evidence of pedestalling. Those pedestals present are sloping or rounding and accumulating litter. Desirable forage grasses may be found along edges of pedestals.
4	(3 points)	There is moderate pedestalling with no visual evidence of healing or deterioration. Small rock and plant pedestals may be occurring in flow patterns.
	(1 point)	Most rocks and plants are pedestalled. Pedestals are sharpsided and eroding, often exposing grass roots.
	SURFACE CRUSTING (5 points)	There is little visual evidence of surface crusting.
4	(3 points)	There is moderate surface crusting with no visual evidence of healing or deterioration. (Note reason for cause)
	(1 point)	Severe surface crusting. (Note reason for cause)
	RILLS AND GULLIES (5 points)	Gullies (including rills) may be present in stable condition with moderate sloping or rounded sides. Perennials are establishing themselves on bottom and sides of channel.
4	(3 points)	Gullies are well developed with small amounts of active erosion. Some vegetation may be present.
	1 point)	Sharply incised V-shaped gullies cover most of the area with most of the gullies actively eroding. Gullies are mostly devoid of perennial plants. They have fresh cutting on the bottom.

Total: 30 Rating: 35-40 = Upward, 26-34 = Static, 16-25 = Downward

Field Notes:

AOC RANGELAND ECOLOGICAL CONDITION CRITERIA
(at a community level)

CRITERIA	GOOD	FAIR	POOR
	Phase 1:	**Soil Stability**	
A - horizon	[✓ Present and distribution unfragmented]	Present but fragmented distribution developing *or buried partly*	Absent, or present only in association prominent plants or with other obstruction *buried*
Pedestaling	No pedestaling of plants or rocks	[✓ Pedestals present, but on mature plants only, no roots exposed]	Most plants and rocks pedestaled; roots exposed
Rills and gullies	Absent, or with blunted and muted features	[✓ Small, embryonic, and not connected into a dendritic pattern]	Well defined, actively expanding, dendritic pattern established
Scouring or sheet erosion	No visible scouring or sheet erosion	[✓ Patches of bare soil or scours developing; moderate or slight erosion]	Bare areas and scours well developed and contiguous; erosion severe
Sedimentation or dunes	[✓ No visible soil deposition]	Soil accumulating around plants or small obstructions	Soil accumulating in large barren deposits or duns or behind large obstructions; obvious tailings present
	Phase 2:	**Plant Distribution**	
Distribution of plants (Sociability Class)	[✓ Most plants well distributed across site]	Most plant distribution becoming fragmented	Plants clumped, often in association with prominent individuals; large bare areas between clumps
Litter distribution and incorporation	[✓ Uniform across site]	Some litter present of litter becoming associated with prominent plants or other obstructions	Litter largely absent
Rooting structure	[✓ Community structure indicates rooting throughout the soil unit]	Community structure indicates absence of roots from portions of the soil unit	Community structure indicates rooting in only one portion of the soil unit
	Phase 3:	**Recovery Potential**	
Age-class distribution	Distribution reflects all species, seedlings generally present	[✓ Seedlings and young plants of some taxa missing]	Few to No seedlings, primarily old or deteriorating plants present
Plant vigor	Plants display normal growth form	[✓ Some plants developing abnormal growth form]	Most plants in abnormal growth form
Germination microsite	[✓ Microsites present and distributed across the site]	Developing crusts, soil movement, or other factors degrading microsites, developing crusts are fragile	Soil movement or crusting sufficient to inhibit most germination and seedling establishment

Chino Mines

SOIL QA

Date: 10.2.97
Observer: CB

Site Number	Range Type	Location			Elevation	Permeability	Aspect	Slope	Classification		Geology
		Section	Township	Range					NRCS	CMC	
HW-168		36	18S	13W	5689'	moderate	W	8%	(47) Plack Series * more closely	classified ~~mapped~~ as Lonti	not available

Author	Horizon	Depth		Effer.	pH	Color	M D	Texture	Structure	Consistency	Boundary	Coarse Fragments
		from	to									

Field Notes:

- Soil mapped as Plack (47), but has Lonti gravelly loam as inclusion in series. Soil is most like Lonti gravelly loam, so agrees w/ Plack ~~cla~~ Series. (clay loam, gravelly, @ 3-4" down etc)

Occular Reconnaisance

Growth Form	Species	Age Class (Shrub and Tree)	Dominance Rating	% Foliar Coverage	% Decodent/Dead	% Present	Sociability (1-5)	Utilization (SMH)
6	PROB		5	T	T	T	5	
	SELE4		2				5	
	HIJA		4				5	
	BOCU		3				5	
	BOBR3		2				5	
C	~~OPIM~~ ECFE		1	T	T	T	5	
	OPPH		3	T	T	T	5	
F	LEER		2	T	T	T	5	
	SOEL		4				5	
	CAHU		5				5	
	ZIGR		4				5	
AMFI	Unknown 150 (JR)		2				5	
	~~GUUS~~ PHUE5		1				5	
	ARLU		1				5	
	~~ASLI~~ ASSU2		2				5	
	ERWR		3				5	
	~~SPFE~~ SPLA		3				5	
	CRPO5		2				5	
	Unknown 151 (JR)		1				5	
	Unknown 152 (JR)		1				5	
	HERN3		3				5	
	ENHE 7		3				5	
HS	GUSA2		23				5	
	GYGL		2				5	
	BRCA3		3				5	
S/T	DAWH2	V/	3				5	
	YUBA	V/	2				5	
	NOMI	V/	2				5	
	MOMI	-/	3				5	
	RHTR	V/	2				5	S
	YUEL	V/	2				5	
	JUDE2	◇/	2				5	
	MIBI3	V/	3				5	
	JUMO	◇/	2				5	
	EPTR	◇/	2				5	
	GAWR3	V/	2				5	H
	QUEM	4/	2	1		10	5	
	QUGR3	◇/	2	1		10	5	S
	PRGL2	9/	5	3		30	5	

AOC

Observer JR
Date 9-23-97

SWA No. HE 192
Photo No. 4-19
Sect. 29 **T** 18S **R** 11W

Range Site Name(s) & %

Slope 30 **Aspect** SW **Elevation** 6200'
Associated Sites HE 193, HE 193B

CONDITION INDICATORS:

Preliminary Condition Class: E G [✓ F] P
Active Erosions: Wind Pedestals Sheet [✓ Rill] Gull
None [✓ Slight] Moderate Severe Very sever

Stand for Site: Full ¾ ½ ¼ 1/10
lb/acre:
Final Condition Class Rating:

OAT Static (33)
Past Disturbances Grazing, Mining.

% CATEGORIES

10	Foliar Coverage	90	Other
T	Fern and Fern Allies	20	Bare soil
1	Grass and Grass-like	5	Litter
2	Forbs	5	Sand
T	Half-shrubs	25 ~~20~~	Gravel
7	Shrubs/Trees	30 ~~25~~	Cobble/Stones
T	Cacti	15	Boulder
		T	Exposed Bedr
			Cryptograms

Ave. height of dominant, mature woody species (ft.)

4 feet

FIELD NOTES:

This site is adjacent (NE) of the smelter. Cover increases upslope. Quercus spp, GAWR3, RHTR, Juniper spp. also increase upslope.

QA Check
date: 10.27.97
init: AR

Check appropriate box in each category which best fits area being observed. Points may vary within each category.

	VIGOR	(10 points)	Desirable grasses, forbs and shrubs are vigorous, showing good health. These plants have good size, color and produce abundant herbage.
8		(6 points)	Desirable grasses, forbs and shrubs have moderate vigor. They are medium size with fair color and produce moderate amounts of herbage. Some seed stalks and seed heads are present.
		(2 points)	Desirable grasses, forbs and shrubs have low vigor. They appear unhealthy with small size and poor color. Portions of clumps or entire plants are dead or dying. Seed stalks and seed heads are non-existent except in protected areas.
	SEEDLINGS	(10 points)	There is seedling establishment of desirable grasses, forbs and shrubs. Seedlings are present in open spaces between plants and along edges of soil pedestals. Few seedlings of invader or undesirable plants are present.
7		(6 points)	Some seedlings of desirable grasses, forbs and shrubs may or may not be present in open spaces between plants. Some seedlings of invader or undesirable plant species may or may not be present.
		(2 points)	Few if any seedlings of desirable grasses, forbs and shrubs are being established. Seedlings of invader or undesirable plants are present in open spaces between plants.
	SURFACE LITTER	(5 points)	Surface litter is accumulating in place.
5		(3 points)	Moderate movement of surface litter is apparent and deposited against obstacles.
		(1 point)	Very little surface litter is remaining.
	PEDESTALS	(5 points)	There is little visual evidence of pedestalling. Those pedestals present are sloping or rounding and accumulating litter. Desirable forage grasses may be found along edges of pedestals.
4		(3 points)	There is moderate pedestalling with no visual evidence of healing or deterioration. Small rock and plant pedestals may be occurring in flow patterns.
		(1 point)	Most rocks and plants are pedestalled. Pedestals are sharpsided and eroding, often exposing grass roots.
	SURFACE CRUSTING	(5 points)	There is little visual evidence of surface crusting.
5		(3 points)	There is moderate surface crusting with no visual evidence of healing or deterioration. (Note reason for cause)
		(1 point)	Severe surface crusting. (Note reason for cause)
	RILLS AND GULLIES	(5 points)	Gullies (including rills) may be present in stable condition with moderate sloping or rounded sides. Perennials are establishing themselves on bottom and sides of channel.
4		(3 points)	Gullies are well developed with small amounts of active erosion. Some vegetation may be present.
		1 point)	Sharply incised V-shaped gullies cover most of the area with most of the gullies actively eroding. Gullies are mostly devoid of perennial plants. They have fresh cutting on the bottom.

Total: 33

Rating: 35-40 = Upward, [✓ 26-34 = Static,] 16-25 = Downward

Field Notes:

AOC RANGELAND ECOLOGICAL CONDITION CRITERIA
(at a community level)

HE 192

CRITERIA	GOOD	FAIR	POOR
	Phase 1:	**Soil Stability**	
A - horizon	Present and distribution unfragmented	[✓ Present but fragmented distribution developing *or buried partly*]	Absent, or present only in association prominent plants or with other obstruction *buried*
Pedestaling	No pedestaling of plants or rocks	[✓ Pedestals present, but on mature plants only, no roots exposed]	Most plants and rocks pedestaled; roots exposed
Rills and gullies	Absent, or with blunted and muted features	[✓ Small, embryonic, and not connected into a dendritic pattern]	Well defined, actively expanding, dendritic pattern established
Scouring or sheet erosion	No visible scouring or sheet erosion	[✓ Patches of bare soil or scours developing; moderate or slight erosion]	Bare areas and scours well developed and contiguous; erosion severe
Sedimentation or dunes	No visible soil deposition	[✓ Soil accumulating around plants or small obstructions]	Soil accumulating in large barren deposits or duns or behind large obstructions; obvious tailings present
	Phase 2:	**Plant Distribution**	
Distribution of plants (Sociability Class)	Most plants well distributed across site	[✓ Most plant distribution becoming fragmented]	Plants clumped, often in association with prominent individuals; large bare areas between clumps
Litter distribution and incorporation	Uniform across site	[✓ Some litter present of litter becoming associated with prominent plants or other obstructions]	Litter largely absent
Rooting structure	[✓ Community structure indicates rooting throughout the soil unit]	Community structure indicates absence of roots from portions of the soil unit	Community structure indicates rooting in only one portion of the soil unit
	Phase 3:	**Recovery Potential**	
Age-class distribution	Distribution reflects all species, seedlings generally present	[✓ Seedlings and young plants of some taxa missing]	Few to No seedlings, primarily old or deteriorating plants present
Plant vigor	[✓ Plants display normal growth form]	Some plants developing abnormal growth form	Most plants in abnormal growth form
Germination microsite	Microsites present and distributed across the site	[✓ Developing crusts, soil movement, or other factors degrading microsites, developing crusts are fragile]	Soil movement or crusting sufficient to inhibit most germination and seedling establishment

Chino Mines

SOIL QA

Date: 9-23-97
Observer: JR

Site Number	Range Type	Location			Elevation	Permeability	Aspect	Slope	Classification		Geology
		Section	Township	Range					NRCS	CMC	
HE192		~~[illegible]~~ 29,30	18S	11W	6200'	Moderate	SW	30 %	2-Abrazo-Luzena complex 15-45% slopes	See below	Tstd- Ash-Flow Tuff

Author	Horizon	Depth		Effer.	pH	Color	M D	Texture	Structure	Consistency	Boundary	Coarse Fragments
		from	to									
See FIELD NOTES:												

Field Notes:

Soil on this site aggrees with Abrazo Series (NRCS).

Occular Reconnaisance

AOC

Observer J.D.
Date 9-23-97

SWA No. HE 216
Photo No. 4-17
Sect. 5 **T** 18/19S **R** 12W

Range Site Name(s) & %

Slope 5% **Aspect** SE **Elevation** 5640
Associated Sites HE 308, & HE 309

CONDITION INDICATORS:
Preliminary Condition Class: E G F [✓ P]
Active Erosion: Wind [✓ Pedestals] [✓ Sheet] [✓ Rill] Gully
None Slight [✓ Moderate] [✓ Severe] Very severe

Stand for Site: Full ¾ ½ ¼ 1/10
lb/acre:
Final Condition Class Rating:

OAT 13 Below downward
Past Disturbances Grazing livestock/wildlife
Smelter exhaust

% CATEGORIES

Foliar Coverage 9%	**Other** 91%
0 Fern and Fern Allies	60 Bare soil
0 Grass and Grass-like	0 Litter
0 Forbs	1 Sand
0 Half-shrubs	0 Gravel
9 Shrubs/Trees	30 Cobble/Stones
T Cacti	0 Boulder
	0 Exposed Bedrock
	0 Cryptograms

Ave. height of dominant, mature woody species (ft.):
Dominate PRGL2 ~~3ft~~
Codominate LYPA 1ft

	Growth Form	Species	Age Class (Shrub and Tree)	Dominance Rating	% Foliar Coverage	% Decodent/Dead	% Present	Sociability (1-5)	Utilization (SMH)
	T	JUDE2	>	2	T	–	–	5	S
	S	LYPA	/	3	1	80.	11.1	4	H
	S	PRGL2	◇/	5	7	55	77.7	3	M
	S	NOMI	/	2	T	–	–	3	S
	S	YUEL	/	3	1	0.01	11.1	5	S
	S	YUBA	/	2	T	–	–	5	S
	S	EPTR	/	2	T	–	–	4	S
	½S	ACAN	/	2	T	–	–	3	S
	½S	GYBL	/	2	T	–	–	4	S
	½S	GUSA2	/	2	T	–	–	4	S
SPLA	F	Funk 131	~~2~~	~~2~~	T	–	–	5	S
	F	POOL		2	T	–	–	4	S
VEEN	F	Funk 125		2	T	–	–	4	S
	F	SAKA		2	T	–	–	5	S
	F	MATA2		2	T	–	–	4	S
	F	SOEL		2	T	–	–	4	S
	F	ERAL4		2	T	–	–	4	S
	F	ZIGR		1	T	–	–	5	S
	F	ERLA12		2	T	–	–	5	S
	C	OPEN3		1	T	–	–	4	S
	C	OPIM		2	T	–	–	4	S

FIELD NOTES:

- Active erosion, sheet is severe, pedestals moderate.
- Two track access site to monitoring station which has utility lines leading to station.
- GUSA, MATA, SAKA & SOEL located alongside two track only.
- carcass of deer on site

QA Check
Date: 10/3/97
Initials: KM

Check appropriate box in each category which best fits area being observed. Points may vary within each category.

	VIGOR (10 points)	Desirable grasses, forbs and shrubs are vigorous, showing good health. These plants have good size, color and produce abundant herbage.
	(6 points)	Desirable grasses, forbs and shrubs have moderate vigor. They are medium size with fair color and produce moderate amounts of herbage. Some seed stalks and seed heads are present.
2	(2 points)	Desirable grasses, forbs and shrubs have low vigor. They appear unhealthy with small size and poor color. Portions of clumps or entire plants are dead or dying. Seed stalks and seed heads are non-existent except in protected areas.
	SEEDLINGS (10 points)	There is seedling establishment of desirable grasses, forbs and shrubs. Seedlings are present in open spaces between plants and along edges of soil pedestals. Few seedlings of invader or undesirable plants are present.
2	(6 points)	Some seedlings of desirable grasses, forbs and shrubs may or may not be present in open spaces between plants. Some seedlings of invader or undesirable plant species may or may not be present.
	(2 points)	Few if any seedlings of desirable grasses, forbs and shrubs are being established. Seedlings of invader or undesirable plants are present in open spaces between plants.
	SURFACE LITTER (5 points)	Surface litter is accumulating in place.
1	(3 points)	Moderate movement of surface litter is apparent and deposited against obstacles.
	(1 point)	Very little surface litter is remaining.
	PEDESTALS (5 points)	There is little visual evidence of pedestalling. Those pedestals present are sloping or rounding and accumulating litter. Desirable forage grasses may be found along edges of pedestals.
3	(3 points)	There is moderate pedestalling with no visual evidence of healing or deterioration. Small rock and plant pedestals may be occurring in flow patterns.
	(1 point)	Most rocks and plants are pedestalled. Pedestals are sharpsided and eroding, often exposing grass roots.
	SURFACE CRUSTING (5 points)	There is little visual evidence of surface crusting.
2	(3 points)	There is moderate surface crusting with no visual evidence of healing or deterioration. (Note reason for cause)
	(1 point)	Severe surface crusting. (Note reason for cause)
3	**RILLS AND GULLIES** (5 points)	Gullies (including rills) may be present in stable condition with moderate sloping or rounded sides. Perennials are establishing themselves on bottom and sides of channel.
	(3 points)	Gullies are well developed with small amounts of active erosion. Some vegetation may be present.
	1 point)	Sharply incised V-shaped gullies cover most of the area with most of the gullies actively eroding. Gullies are mostly devoid of perennial plants. They have fresh cutting on the bottom.

Total: 13

Rating: 35-40 = Upward, 26-34 = Static, 16-25 = Downward

Field Notes:

Surface crusting caused by a combination of factors & pH, grazing by livestock, and surface erosion.

Chino Mines

SOIL QA

Date:

Observer: JD & AR

Site Number	Range Type	Location			Elevation	Permeability	Aspect	Slope	Classification		Geology
		Section	Township	Range					NRCS	CMC	Tkn
HE-216		5	18S & 19S	12W	5640'	mod-slow	SW	< 5%	13-Enciero Rock Outcrop	generally agrees; see below	Kneeling Nun Rhyolite Tuff

Author	Horizon	Depth		Effer.	pH	Color	M D	Texture	Structure	Consistency	Boundary	Coarse Fragments
		from	to									
NRCS	A	0	2	No	7.8	7.5YR 3/2	m	gr l	s f gr	s fr ss & sp	cs	25%
CMC	A	0	5	No	4.3	7.5YR 3/3	m	sl	s f gr	s fr ns & np	cs	15%
NRCS	B21t	2	6	No	7.8	7.5YR 3/2	m	gr c	s f sabk	vh fr s & p	cw	15%
CMC	Bt1	5	10	No	6.5	7.5YR 3/3	m	gr c	s f sabk	s fr s & p	gr i	30%
NRCS	B22t	6	9	No	7.8	5YR 3/4	m	gr c	s f sabk	vh fr s & p	ci	15%
CMC	Bt2	10	14	No	7.0	5YR 3/3	m	gr c	s f sabk	vh s & p		20%
NRCS	R	9	+			fractured dolomitic limestone						
CMC	R	14	+									

Field Notes:

Clay films can be found in both Bt horizons. Fine roots penetrate as far down as the Bt1 horizon.

Growth Form	Species	Age Class (Shrub and Tree)	Dominance Rating	% Foliar Coverage	% Decadent/Dead	% Present	Sociability (1–5)	Utilization (SMI)

Observer CB
Date 10-1-97
SWA No. HW-111/165
Photo No. 2-19
Secs. 36, 25 T 18S R 13W

Range Site Name(s) & % _____

Slope _____ Aspect E+W Elevation 5700'
Associated Sites HW-112, HW-158

CONDITION INDICATORS:
Preliminary Condition Class: E [✓ G F] P
Active Erosion: Wind Pedestals Sheet Rill Gul
None Slight Moderate Severe Very seve

Stand for Site: Full ¾ ½ ¼ 1/10
lb/acre: _____
Final Condition Class Rating: _____

OAT _____
Past Disturbances _____

% CATEGORIES
Foliar Coverage _____
_____ Fern and Fern Allies
_____ Grass and Grass-like
_____ Forbs
_____ Half-shrubs
_____ Shrubs/Trees
_____ Cacti

Other _____
_____ Bare soil
_____ Litter
_____ Sand
_____ Gravel
_____ Cobble/Stone
_____ Boulder
_____ Exposed Bed
_____ Cryptogams

Ave. height of dominant, mature woody species (ft

FIELD NOTES:

Site identical to HW-155/160

Aoc

Occular Reconnaisance

Growth Form	Species	Age Class (Shrub and Tree)	Dominance Rating	% Foliar Coverage	% Decadent/Dead	% Present	Sociability (1-5)	Utilization (SMH)
G/S	BOCU		5	2%	T	17%	5	M
	MUTO2		4	1%		8%	3	M
	BOER4		4	1%		8%	2	M
	BOGR2		2	T		T		
	ARPU9		3	T		T		
	DAPU7		4	1%		8%	5	M
	MUEL Muhlenbergia (p382)		5	1%		8%	5	M
	ARAR6 Aristida (p398)		2	T		T		
	SPCR		2	T				
	PAHA		2	T				
	SCBR2		2	T				
	HIJA		3	T				
	BOBA3		1	T	↓	↓		
Forbs	OXCO6 ~~Unk (p. 401)~~		3	T	T	T	5	
	SIPH2 ~~Unk (p397)~~		4				5	
	MATA2		2					
	CIUN		1					
	HASP3		4					
	ARPO2		3					
	SOEL		3					
	HOGL2		4					
	TILA2		2	↓	↓	↓		
S/T	YUEL		4	1%	T	8%		
	PRGL2	0	2	T	T	T		
		-						
1/2S	GUSA2		5	3%	T	25%	5	–
	SEDO2		3	T	T	T		
Suc	OPMA2		2	T	T	T		
	OPSP2		3	T	T	T		

Observer CB/JR
Date 10·1·97

SWA No. HW-155/160
Photo No. 2-19
Sect. 35+2 T 18S R 13W

Range Site Name(s) & % ______

Slope 0-5% Aspect E+W Elevation 5600'
Associated Sites HW-136

CONDITION INDICATORS:

Preliminary Condition Class: E [✓ G] [✓ F] P
Active Erosion: Wind Pedestals [✓ Sheet] [✓ Rill] Gully
None [✓ Slight] Moderate Severe Very severe

Stand for Site: Full ¾ ½ ¼ 1/10
lb/acre: ______
Final Condition Class Rating: ______

OAT (29) Static
Past Disturbances grazing, stockpond, powerlines

% CATEGORIES

Foliar Coverage	12%	Other	88%
—	Fern and Fern Allies	43%	Bare soil
6%	Grass and Grass-like	2%	Litter
1%	Forbs	3%	Sand
3%	Half-shrubs	35%	Gravel
2%	Shrubs/Trees	5%	Cobble/Stones
T	Cacti	—	Boulder
		—	Exposed Bedr:
		—	Cryptograms

Ave. height of dominant, mature woody species (ft.)
YUEL = 4'

FIELD NOTES:

QA Check
date: 10·27·97
init: AR

Check appropriate box in each category which best fits area being observed. Points may vary within eac

	VIGOR (10 points)	Desirable grasses, forbs and shrubs are vigorous, showing good health. These plants have good color and produce abundant herbage.
8	(6 points)	Desirable grasses, forbs and shrubs have moderate vigor. They are medium size with fair color and produce moderate amounts of herbage. Some seed stalks and seed heads are present.
	(2 points)	Desirable grasses, forbs and shrubs have low vigor. They appear unhealthy with small size and poor color. Portions of clumps or entire plants are dead or dying. Seed stalks and seed heads are non-existent except in protected areas.
	SEEDLINGS (10 points)	There is seedling establishment of desirable grasses, forbs and shrubs. Seedlings are present in open spaces between plants and along edges of soil pedestals. Few seedlings of invader or undesirable plants are present.
8	(6 points)	Some seedlings of desirable grasses, forbs and shrubs may or may not be present in open spaces between plants. Some seedlings of invader or undesirable plant species may or may not be present.
	(2 points)	Few if any seedlings of desirable grasses, forbs and shrubs are being established. Seedlings of invader or undesirable plants are present in open spaces between plants.
	SURFACE LITTER (5 points)	Surface litter is accumulating in place.
3	(3 points)	Moderate movement of surface litter is apparent and deposited against obstacles.
	(1 point)	Very little surface litter is remaining.
	PEDESTALS (5 points)	There is little visual evidence of pedestalling. Those pedestals present are sloping or rounding and accumulating litter. Desirable forage grasses may be found along edges of pedestals.
3	(3 points)	There is moderate pedestalling with no visual evidence of healing or deterioration. Small rock and plant pedestals may be occurring in flow patterns.
	(1 point)	Most rocks and plants are pedestalled. Pedestals are sharpsided and eroding, often exposing grass roots.
	SURFACE CRUSTING (5 points)	There is little visual evidence of surface crusting.
3	(3 points)	There is moderate surface crusting with no visual evidence of healing or deterioration. (Note reason for cause) not enough cover
	(1 point)	Severe surface crusting. (Note reason for cause)
	RILLS AND GULLIES (5 points)	Gullies (including rills) may be present in stable condition with moderate sloping or rounded sides. Perennials are establishing themselves on bottom and sides of channel.
4	(3 points)	Gullies are well developed with small amounts of active erosion. Some vegetation may be present.
	1 point)	Sharply incised V-shaped gullies cover most of the area with most of the gullies actively eroding. Gullies are mostly devoid of perennial plants. They have fresh cutting on the bottom.

Total: 29

Rating: 35-40 = Upward, [✓ 26-34 = Static,] 16-25 = Downward

Field Notes:

AOC RANGELAND ECOLOGICAL CONDITION CRITERIA
(at a community level)

HW-155/160

CRITERIA	GOOD	FAIR	POOR
	Phase 1:	**Soil Stability**	
A - horizon	Present and distribution unfragmented	[✓ Present but fragmented distribution developing *or buried partly*]	Absent, or present only in association prominent plants or with other obstruction *buried*
Pedestaling	No pedestaling of plants or rocks	[✓ Pedestals present, but on mature plants only, no roots exposed]	Most plants and rocks pedestaled; roots exposed
Rills and gullies	Absent, or with blunted and muted features	[✓ Small, embryonic, and not connected into a dendritic pattern]	Well defined, actively expanding, dendritic pattern established
Scouring or sheet erosion	No visible scouring or sheet erosion	[✓ Patches of bare soil or scours developing; moderate or slight erosion]	Bare areas and scours well developed and contiguous; erosion severe
Sedimentation or dunes	[✓ No visible soil deposition]	Soil accumulating around plants or small obstructions	Soil accumulating in large barren deposits or duns or behind large obstructions; obvious tailings present
	Phase 2:	**Plant Distribution**	
Distribution of plants (Sociability Class)	Most plants well distributed across site	[✓ Most plant distribution becoming fragmented]	Plants clumped, often in association with prominent individuals; large bare areas between clumps
Litter distribution and incorporation	Uniform across site	[✓ Some litter present of litter becoming associated with prominent plants or other obstructions]	Litter largely absent
Rooting structure	Community structure indicates rooting throughout the soil unit	[✓ Community structure indicates absence of roots from portions of the soil unit]	Community structure indicates rooting in only one portion of the soil unit
	Phase 3:	**Recovery Potential**	
Age-class distribution	Distribution reflects all species, seedlings generally present	[✓ Seedlings and young plants of some taxa missing]	Few to No seedlings, primarily old or deteriorating plants present
Plant vigor	[✓ Plants display normal growth form]	Some plants developing abnormal growth form	Most plants in abnormal growth form
Germination microsite	[✓ Microsites present and distributed across the site]	Developing crusts, soil movement, or other factors degrading microsites, developing crusts are fragile	Soil movement or crusting sufficient to inhibit most germination and seedling establishment

Chino Mines

SOIL QA

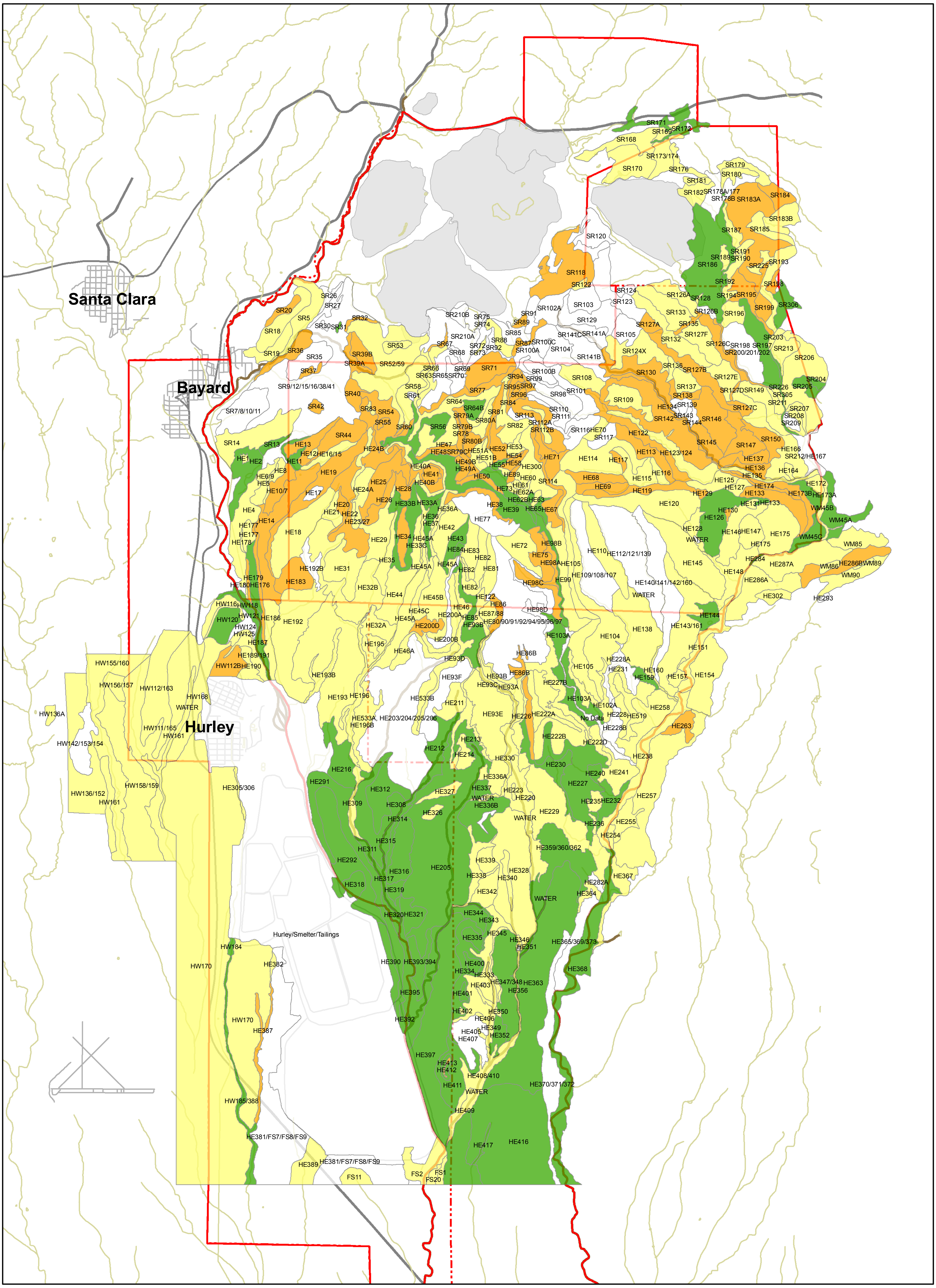
Date: 10.1.97
Observer: JR/CB

Site Number	Range Type	Location			Elevation	Permeability	Aspect	Slope	Classification		Geology
		Section	Township	Range					NRCS	CMC	
HW-155		35	18	13	5600'	Slow	W	0-5%	(26) Lonti Series	See below	N/A

Author	Horizon	Depth		Effer.	pH	Color	M D	Texture	Structure	Consistency	Boundary	Coarse Fragments
		from	to									
CMC	A	0	4	no	8.0	7.5YR 2.5/1	m	gcl	w m gr	Sap	gs	20%
						7.5YR 6/2	d					
CMC	Bt1	4	~~8~~ 16*	no	8.0	7.5YR 3/2	m	c	m m SBK	Sap	gs	25%
CMC	Bt2	16	+	no	8.0	7.5YR 4/4	D	Gravelly Cobbly C	m f sbk	stp		60%
						7.5YR 5/6	m					
~~CMC~~	~~Bt2~~	~~8~~	~~+~~	~~no~~	~~8.0~~	~~7.~~						

Field Notes:

* Soil follows Lonti gravelly clay loam (26) classification



LEGEND:

Rangeland Status

🟩 DOWNWARD

🟨 STATIC

🟧 UPWARD

⬜ N/A

AOC BOUNDARY

HYDROLOGY

Note: Rangeland status is not necessarily the same as rangeland condition, but rather shows the trend in the condition. Map shows polygons areas in which Braun Blanquet releves were established to assess rangeland condition and status in 1997.

0 1 2 Miles

GRAPHIC SCALE

CHINO MINES COMPANY HURLEY, NM
YEAR 5 MONITORING REPORT - AMENDMENT STUDY

RANGELAND CONDITION POLYGONS

ARCADIS

FIGURE
A-1

Appendix B

Supporting Vegetation Data

Appendix B-1

Standard Operating Procedure for Foliage Sampling for Copper at Four Amendment Areas

Foliage was sampled in October 2013 at all four amendment pilot study areas, as well as at associated reference areas, to evaluate concentrations of copper in above ground biomass. October 2013 reflects five years after completion of construction activities associated with the Smelter/Tailing Soils Investigation Unit Amendment Study plots, and the conclusion of monitoring activities consistent with the approved *Administrative Order on Consent – Amendment Study Work Plan, Smelter/Tailing Soil Investigation Unit* (ARCADIS 2008).

Species selection for copper concentration analysis was performed at the beginning of the pilot study on March 20, 2008. The plant species are summarized below.

West amendment plot: purple loco (*Oxytropis lambertii),* blue grama *(Bouteloua gracilis),* Arizona three-awn *(Aristida arizonica),* snakeweed *(Gutierrexia sarothrae),* sideoats grama *(Bouteloua curtipendula)*
North amendment plot: sideoats grama (*Bouteloua curtipendula),* vine mesquite *(Panicum obtusum),* Arizona three-awn *(Aristida arizonica)*
Northeast amendment plot: sideoats grama (*Bouteloua curtipendula*)*,* blue grama *(Boutelous gracilis)*
East amendment plot: snakeweed (*Gutierrexia sarothrae), Aster sp.,* vine mesquite (*Panicum obtusum)*

However, not all species could be included at the end of the five-year pilot study in 2013 due to decreases in abundance of some of these species within the amendment plots over time (i.e., *Gutierrexia sarothrae*). When such changes were required, ARCADIS attempted to best reflect (1) dominant perennial grass, forb, or shrub species within a plot, and (2) consistency of species across the four amendment pilot study areas where possible. An inventory of samples collected on October 8 to 10, 2013 to be analyzed is included in **Table 8**, and summarized below.

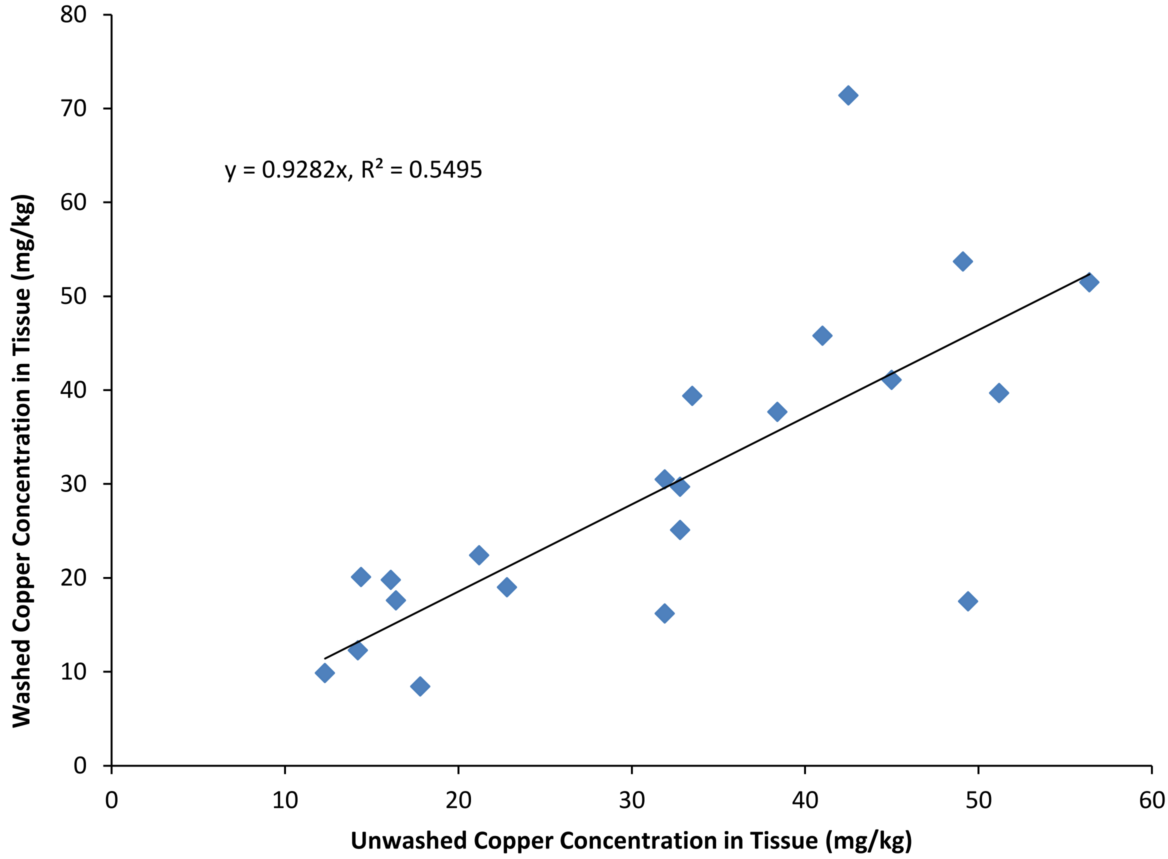
West amendment plot: sideoats grama (*Bouteloua curtifpendula),* honey mesquite *(Prosopis grandulosa),* red three-awn *(Aristida purpurea)*
North amendment plot: honey mesquite (*Prosopis grandulosa),* vine mesquite *(Panicum obtusum),* sideoats grama *(Bouteloua curtifpendula)*
Northeast amendment plot: sideoats grama (*Bouteloua curtifpendula),* honey mesquite *(Prosopis glandulosa),* vine mesquite *(Panicum obtusum)*
East amendment plot: golden crownbeard (*Verbesina encelioides),* honey mesquite *(Prosopis glandulosa),* green bristlegrass *(Setaria viridis),* sideoats grama *(Bouteloua curtifpendula),* vine mesquite *(Panicum obtusum)*

Vegetative material was collected for each selected species (**Table 8**) from random individuals across each amendment area. The sampler randomly traversed each amendment area, collecting vegetated material from multiple individuals. For smaller herbaceous species, entire plants were harvested by cutting vegetative material just above the soil surface including seeds and fruits. For shrub species, leaves, petioles, and fruit material were collected. This approach followed the same approach used in 2008 of combining all plant material, whether foliage or seeds. No woody material was sampled. All samples were collected in brown paper lunch bags to keep samples dry and prevent molding. Each bag was labeled with species name, sampling location, name of sampler, and date. Consistent with laboratory requirements, approximately half of a standard size brown paper lunch bag was filled with vegetative material. For each species, two paper bags were filled for each amendment area as well as the associated reference areas.

Two samples were collected for each species. One sample was cleaned to remove soil and dust. The other sample was compared to previous survey results because sample cleaning was not performed at the beginning of the 5-year study.

Cleaning was performed by filling three stainless steel bowls with distilled water. Vegetative material was placed in the first bowl and effectively stirred, allowing dust and dirt to fall off. This was done three times in each of the bowls to facilitate an effective cleaning of the collected vegetative material. Following washing, each sample was patted dry with paper towel and allowed to dry overnight. Once the samples were dry, the materials were placed in new brown paper lunch bags and a desiccant package added to each. All samples were sent overnight express to the laboratory for analysis.

Cleaning activities were performed on one sample to address the concern of dust and/or soil material biasing the analysis. While previous analyses associated with the risk assessment were focused on any copper that may accumulate through the food chain, the focus of this analysis is on only the uptake of copper in above-ground biomass to evaluate the effectiveness of the amendments on the plant community. Given the limited size of each amendment plot, dust collected on each plant likely did not originate within only the amendment plot area. Therefore, these cleaned samples will provide a more accurate evaluation of copper taken up and stored in above-ground vegetative material. In addition, the data collected in 2013 will provide comparisons within each amendment area to samples collected in the associated reference areas (no reference data were collected in March 2008).



FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Regression of Washed vs. Unwashed Copper Concentrations in Plant Tissue

ARCADIS

FIGURE
Appendix B-2

Appendix B-3

Quality of Vegetation Re-establishment

This appendix evaluates if the vegetation re-establishment has produced a community similar to the one present prior to disturbance or is on an expected trajectory toward such a community. In contrast, the main text of the report evaluates if the reduction in pCu improved the plant community for use as wildlife or rangeland habitat.

Arcadis assessed the success of vegetation re-establishment following disturbance caused by the remedial actions by examining the (1) relative proportion of life forms (annual/perennial, grass/forb/shrub), (2) vegetation cover, (3) species diversity measures, and (4) native species composition in amendment versus reference plots. These metrics were measured in both the circular subplots established for this study (ARCADIS 2008a and ARCADIS 2011b) and in Closure/Closeout Plan (CCP) quadrats (Daniel B. Stephens & Associates, Inc. 1999 and Chino 2007). Results obtained from the CCP quadrats were compared to criteria as discussed in the text. This appendix provides more details on trends in these characteristics and relates the results to literature on vegetation successional processes.

Tables and figures cited throughout the text are associated with the main report or **Appendix B** as noted.

1. Life Forms Established by End of 5-year Sampling Period in 2013

West Amendment Plot. In fall 2013, five years after amendments and/or tilling, the West amendment plot contained relatively even proportions of annual and perennial forbs, perennial grasses, and shrubs (**Appendix B-10**). Heterogeneity was high in this plot in fall 2013 as compared to earlier sampling periods (e.g., fall 2010) when perennial grasses dominated and shrubs and annual species were sparse on the sampling transects. The West plot is a control plot because it is untreated. However, the West plot does not characterize conditions targeted after re-establishment for the amended East, Northeast, and North plots because it is in the mixed grama herbaceous alliance (Newfields 2005), a different, more grass-dominated vegetation alliance than the mesquite/grama alliance of the other three plots. Nonetheless, this control plot shows vegetation shifts commonly occur naturally over time.

Northeast Amendment Plot. The untilled Northeast amendment plot represents the steeper slopes that are in the mesquite-and grama-dominated vegetation alliance (called mesquite/grama alliance, Newfields 2005), an alliance that is dominated by mesquite. In 2013, this plot was mostly dominated by perennial forbs and shrubs, life forms that were common in the plot prior to amendments (**Appendix B-10**). Notably, perennial grasses were more common prior to amendment application than in later sampling periods up to 2013 (**Figure 10).** Annual forbs were more common in 2010 but decreased by 2013 (**Appendix B-10**, **Figure 8**). These results suggest that re-establishment of the original proportions of the life forms, particularly grasses, is still in progress.

North and East Amendment Plots. Both the tilled North and East amendment plots are also in the mesquite/grama alliance but showed the opposite pattern in annual forbs from the Northeast amendment plot; these plots were dominated by annual forbs (early successional species), which have been steadily increasing over time (**Appendix B-10, Figure 8**). The trends in species composition in the North and East amendment plots were expected, given the effects of clearing and tilling that occurred in conjunction with the amendment application. The application of manure on the tilled plots can distribute seeds carried in the manure, and may have contributed to the large quantity of two highly aggressive species, carelessweed (*Amaranthus palmeri*) and golden crownbeard (*Verbesina encelioides*), which are potentially toxic to livestock (Kingsbury 1964). Current trends indicate that it may be decades before the communities on the tilled plots reach a more stable composition of perennial species, which is not unexpected (Romme et al. 2003, Daniel B. Stephens & Associates, Inc. 1999, and Chino 2007). Not applying manure may reduce the percent of annuals, as seen on the Golf Course remediation area (ARCADIS 2014a) that used hydro mulch seeding instead of manure, where percentage of cover in annual species after five years was reduced to 28 percent from 46 to 59 percent in the first year.

2. Vegetation Cover

East Plot. The criteria of increasing vegetative cover and reducing bare soil was met in the first year after treatment for the East amendment plot (**Figure 9a, Appendix B-13**). The high cover levels of non-natives such as Russian thistle (*Salsola tragus*) and other species that invaded the site helped to achieve this goal (**Table 15**). Though vegetative cover decreased the following year due to decrease in non-native cover the levels of cover then increased to very high levels by 2013 (**Figure 9a and Figure 12**) due in part to the establishment of native species (**Table 15**). Some of the variability over time is due to the artifact of the season sampled. Spring (sampled in 2008 and 2010) has lower cover compared to fall in this region (**Table 9a**). **Figure 11** displays the change in vegetative cover between amendment and reference plots over time, which reduces this confounding seasonal effect. The "difference in percent cover" in **Figure 11** for cover on the East plot shows a horizontal regression line fit to the data, indicating that the cover in the East amendment plot did not significantly change over time after amendment/tilling relative to the reference plot (both plots increased in cover post-amendment); however, overall cover was higher on the amended East plot after amendments were applied.

North and Northeast Plot. In contrast to the East plot, the North amendment plot cover decreased relative to its reference plot but eventually recovered. Of the four amendment plots, bare soil was highest in the North plot and lowest in the other tilled plot (East) in 2013, but vegetative cover was almost the same in the North plot as in the untreated West plot in 2013 (**Appendix B-5**). Unlike the North plot, the Northeast plot showed positive increases in cover relative to the reference plot over time ($P = 0.200$ for Northeast plot, see **Figure 11**). Note that none of these qualitative changes in "differences in means" for cover in **Figure 11** for any of the plots were statistically significant ($P \geq 0.20$) trends over time post-amendment. Sample size was small ($n = 6$) and limited the ability to detect significant differences.

Using CCP sampling methods, the vegetation cover in the amendment plots ranged from 58 to 79 percent in fall 2013 (**Table 14**). These cover estimates easily exceed the cover requirement of 38 percent set by the CCP guidelines (70 percent of South Tailings Reference Area cover, Daniel B. Stephens & Associates, Inc. 1999 and Chino 2007). Additional data regarding the relative cover of vegetation and bare soil using the CCP quadrats and circular subplots are provided in **Appendix B-11** and **Appendix B-13,** respectively.

3. Species Diversity

A diversity of species successfully colonized the tilled plots, thus meeting the CCP species diversity criterion. The diversity in the limed but untilled Northeast plot was also sustained. All plots met the minimum

CCP criterion of eight species for richness, with 9 to 11 species in the tilled plots and 14 species in the untilled Northeast plot (**Table 14**).

East Plot. The East amendment plot started with very low diversity and species richness before amendment (**Appendix B-13)**, which quickly improved less than a year after the clearing and tilling (**Figure 9a** and **Figure 9b**). Amendment and tilling initially improved the community; richness, evenness, and Shannon diversity of the East plot plant community, however, it did not significantly change relative to its reference plot (trend lines fit to data are not significant at P = 0.619 in **Figure 11**). Sample size was small (n = 6) and variability high from including different seasons in the trend, which limited the ability to detect significant differences.

North Plot. In contrast to the East amendment plot, the North amendment plot initially decreased in diversity after amendment (**Figure 9a, Figure 9b**) and in both diversity and richness relative to the reference plot (**Figure 11**), but then recovered. After amendment and tilling and relative to its reference plot, the three diversity measures did not significantly change over time (**Figure 11**).

Although not statistically significant, the quadratic (hump-shaped) trends in the tilled plots in **Figure 11** fit ecologists' "intermediate disturbance hypothesis" that states highest richness or diversity will be at intermediate levels of disturbance (Molles 2005). Richness and diversity values are low after heavy disturbance (tilled) when only colonizing species thrive, and values are low with low disturbance after enough time has passed that the most competitive species take over and dominate. At intermediate levels of disturbance, there are multiple colonizers and competitive species that increase overall diversity. Following this pattern, the disturbance of the tilled plots resulted in a level of richness improvement that peaked at levels above and beyond the reference plot levels in late 2010 (**Figure 11**) and decreased again by 2013.

Northeast Plot. The Northeast plot was limed and organic matter spread on top of the plants. The data suggest that these activities initially decreased diversity and richness, but both vegetation parameters steadily and significantly recovered relative to the reference plot (**Figure 11**). In contrast, evenness on this plot started out low and improved with the treatment relative to the reference plot, though the trend was not significant (**Figure 11**).

West Plot. As expected, the West amendment plot, as the control, showed no change over time in diversity, richness, or evenness relative to its reference plot. This was shown by the relatively flat lines with mean difference near zero in **Figure 11**, except richness mean difference was higher (near 2) on the amendment plot, indicating some spatial variability in richness between the two untreated plots.

Overall, the assessment of the three diversity measures indicates successful establishment of a diverse vegetation community on the amended plots.

4. Native species and Changes in Species Composition

The criterion of re-establishment of a predominantly native community was also met. Vegetation colonization and succession on the plots that were cleared and tilled followed a typical pattern that included an initial influx of non-native species. By 2013 these non-natives were reduced to a low level of less than 5 percent (**Figure 12**; this analysis assumes *Setaria* sp. on the East amendment plot is a native, but it may be the non-native *Setaria viridis.* If so, non-natives represent 31 percent cover in 2013 on the East amendment plot). The species composition (**Table 15 and Appendix B-14**) changed through time on these plots and is discussed below.

<u>East Plot</u>. Following clearing in December 2008, initial conditions in the East amendment plot included the loss of shrubs such as honey mesquite (*Prosopsis glandulosa*), which previously dominated the site. The honey mesquite community quickly transitioned to an early successional herbaceous plant community of higher canopy cover dominated by the non-native Russian thistle. By fall 2009, other native forbs, particularly golden crownbeard dominated the plot (**Table 13**). The invasive Russian thistle re-appeared in the fall 2010 along with an increase in the native species, golden crownbeard and carelessweed. Russian thistle was reduced to low levels by 2013, and the annual forb, golden crownbeard, continued to dominate the cover (63 percent) in 2013, with bristlegrass (*Setaria* sp.) the next most dominant species. These shifts in species composition differ from the reference plot, which was dominated in October 2013 by honey mesquite, carelessweed, and the native species, hog potato (*Hoffmannseggia glauca*) (**Table 13**). Though not amended or tilled, species composition in the East reference plot has also shifted substantially since 2010. The non-natives on the reference plot have remained minimal, however (assuming bristlegrass is a native). The aggressive annual, carelessweed (Bensch et al. 2003), has been slowly increasing in the study area since December 2008 (**Table 13**) and is now spreading more rapidly into reference plots as well as disturbed amendment plots. On the East reference plot, carelessweed had increased greatly by 2013 (to almost 30 percent cover), while broom snakeweed (*Gutierrexia sarothrae*) had disappeared from the sampled plots. After the amendment study was completed, a visit to the East plot in fall 2014 revealed that golden crownbeard was decreasing in abundance, allowing for grasses such as bristlegrass to increase (**Appendix C**).

<u>North Plot.</u> For the North amendment plot where clearing and tilling also occurred, the shifts in native versus non-native species composition were similar to those observed in the East amendment plot (**Figure 12** and **Table 13**). However, the North amendment plot did not show the reduction in cover of honey mesquite. Nonetheless, a short-lived early successional stage dominated by the invasive non-native Russian thistle as well as native carelessweed was observed following tilling (**Table 13**). After the non-native Russian thistle died back, vine mesquite (*Panicum obtusum*), a grassy native species, increased, and by fall 2010 the community was becoming more similar to the reference plot, with the exception of vine mesquite and non-native lambsquarters (*Chenopodium album*). By the fall of 2013, the non-native lambsquarters declined and an increase in the native carelessweed was observed. Carelessweed, a highly competitive species, dominated the amendment plot in 2013, though its abundance appeared reduced after the study when the plot was observed in fall 2014, though it was still present in 2016. In contrast, the North reference plot contains a community that is largely unchanged over time and is dominated by honey mesquite, scattered soap tree yucca, and a few minor herbaceous plant associates (North reference plot, **Table 13**). However, the reference plot showed signs of invasion by carelessweed in fall 2013. Note that the initial North reference plot (March 2008) was in a slightly different location than the plot measured following amendment/tilling, but it is assumed to have similar vegetation as its prior location.

<u>Northeast Plot</u>. The non-tilled Northeast amendment plot also demonstrated a shift in native/non-native species composition, with the non-native lambsquarters increasing in 2010 and disappearing by 2013. However, relative to the tilled plots, the non-native percentage was small just after the plot was amended (**Figure 12**). Other changes in the native community were also observed. Grasses such as sideoats grama (*Bouteloua curtipendula*) and blue grama (*Bouteloua gracilis*) decreased, while honey mesquite and

whiteball acacia (*Acacia angustissima*) increased (**Table 15**). New shrub species appeared with the addition of rabbit thorn (*Lycium pallidum*) and lote bush (*Ziziphus obtusifolia*), though other species classified as “shrubs” present before amendment application, such as sotol (*Dasylirion wheeleri*), yerba de pasmo (*Baccharis pteronoides*) and fourwing saltbush (*Atriplex canescens*), disappeared from the sample plots by 2013. The highly competitive annual forb, carelessweed, also increased in cover. Note that the initial Northeast reference plot (March 2008) was in a slightly different and less steep location (changed from 50 percent to 28percent, **Table 1**) than the plot measured following amendment/tilling. The original reference plot appeared to have more mesquite and fewer grasses than the moved plot. Nonetheless, the reference area around the Northeast plot has not changed considerably since the March 2008 pre-amendment sampling event. Carelessweed has not yet invaded the Northeast reference plot.

West Plot. In contrast to the other three treated areas, the vegetation community composition within the untreated West (control) plots showed less change over time. However by 2013, carelessweed increased and broom snakeweed disappeared from the sampled plots (**Table 13**). No non-native species occurred on the West plots (**Figure 12**). Because of the different geology of the area (e.g., Gila Conglomerate Formation), the vegetation community in the West plots is part of a different vegetation alliance than the other treated plots, as discussed above. It is part of the mixed grama herbaceous alliance, whereas the other three plots are in the mesquite/mixed grama alliance (Newfields 2005). Therefore, grasses and forbs typically dominate the West plots, with some honey mesquite and scattered wait-a-minute bush in the shrub stratum. A diversity of herbaceous species in the understory included, but was not limited to, sideoats grama (*Bouteloua curtipendula*), ring muhly (*Muhlenbergia torreyi*), Arizona three-awn (*Aristida arizonica*), and spreading three-awn (*Aristida divaricata*).

Considering the plots were not seeded, vegetation community re-establishment is on an expected trajectory toward eventual recovery. Notably, the return of life forms in proportions observed before the disturbance is still far from recovery and may require ten to twenty years to recover. Trends seen with an initial influx of Russian thistle and pigweeds (*Amaranthus* sp.) similar to carelessweed dominating the vegetation are not uncommon in plowed fields that are abandoned and not seeded (Piemeisel 1938). Therefore, the establishment patterns observed on the tilled plots of increasing domination by annual forbs the first five years are typical. For the untilled plot, the large reduction in grasses observed on the northeast amendment plot over time should shift with the eventual return of these grass species.

5. Changes in Species Composition Relative to Successional Patterns Seen in the Literature

Successional processes and rangeland condition affect vegetation establishment patterns and interact with the treatment results, and must be considered in the interpretation of the amendment study findings to avoid ascribing such changes to the treatment. The best way to evaluate these processes is to compare the species composition and successional trajectory of the disturbed treated plots to (1) the undisturbed reference plots to evaluate short-term 5-year effects and (2) published state-transition models in the region to evaluate longer term effects. Bestelmeyer et al. (2004) and the Natural Resources Conservation Service (NRCS) provide state-transition models for various ecotypes in the region. They provide information on long-term successional processes under different disturbances, management, and conditions (overgrazing, drought, soil additions, etc.). The following compares vegetation trends in the amendment and reference plots at each study location in relation to the state-transition models to identify how treatment has affected successional processes in the short-term and may affect such processes in the long term.

Northeast Plots. The northeast plots occur on southeast-facing slopes in the NRCS Hills ecotype, where shrubs, particularly succulents, as well as late successional grasses dominate in areas that are not heavily overgrazed. The expected late successional grasses in this ecotype are sideoats grama, black or blue grama, and tobosa. The northeast reference and untreated amendment plot, which were in fair rangeland condition, fit this description, having sotol (a succulent), bee brush, Yerba de pasmo (shrubs), sideoats grama, blue grama, and vine mesquite growing on the plots[1]. In contrast, once the plot was amended with lime and organic matter, it followed an initial trajectory of losing grasses and succulents, and becoming more shrub-dominated, which is typical in areas with overgrazing, soil erosion, and loss of soil fertility (**Figure 4** in Bestelmeyer et al. 2004). Though the organic matter addition should have increased soil fertility, the disturbance from the amendment application apparently was enough to transition the Northeast plot into a community similar to an overgrazed, eroded site. However, the return of sideoats grama, tobosa, and shrubs in a wet year in 2013, despite the invasion of the annual carelessweed, may indicate the Northeast plot will eventually return to a condition similar to the reference plot. Because the area is a semi-desert, the timeframe for species composition to return to its original state may be up to 215 years (Abella 2010), though perennial cover, currently about half that of the reference plot, may return more quickly. Abella (2010) reported that an average of 76 years was required for perennial cover in the Mojave and Sonoran deserts (up to elevations of 5,300 feet) to recover from disturbances such as fire or right-of-way maintenance.

At higher elevations more similar to Chino mine but without mesquite, Romme et al. (2003) studied recovery timeframes of semi-desert grasslands in the Uncompahgre plateau in Colorado. Their successional model describes disturbance by fire or prairie dogs initiating a successional sequence passing through the following three major stages:

- Early Grass: Forb and other herbaceous species are dominant, with a mix of annuals and perennials, and this stage persists from stand age 0 until age 20 to 30 years;
- Mid Grass: Shrub and herbaceous species are dominant, mostly perennials, with some shrubs becoming established, and this stage persists from stand age 20 to 30 until age 50 to 70 years;
- Shrub Dominated: Mix of mature shrubs and perennial herbs, and this stage persists from stand age 50 to 70 years until the next stand-replacing disturbance.

The above studies suggest that perennial cover may not fully return for 50 to 76 years and that a return to the original species composition could take much longer. This supports the study conclusion that steeper slopes in fair rangeland conditions, despite having high copper or pCu lower than the pre-FS RAC criteria, should not be amended to avoid long-term disturbance or erosion that would offset any benefit potentially obtained by soil amendments.

East Plots. The East plots are also in a Hills ecotype but on a relatively flat area. Bestelmeyer et al. (2004) report that on flat areas, this ecotype has more abundant grasses than on slopes. However, overgrazing can reduce the community to mostly shrubs (such as mesquite) and bare ground. The East reference plot matches the Bestelmeyer et al. (2004) description of an overgrazed community, and its rangeland condition is classified as poor. Over the long term, the East plot treated with tilling, lime, and organic matter will likely improve and respond in a manner similar to communities that received soil additions in Bestelmeyer (2004).

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[1] Vine mesquite can colonize after disturbance as shown in **Table 15** in the North plot but also is common in late successional stage communities (Brock et al. 1978).

Such treatment should eventually return the vegetation to a community that supports perennial grasses including sideoats grama. Results suggest that the treated plot is on such a trajectory. In 2013, the treated plot had about one-third more vegetative cover than the reference plot. Vegetation consisted primarily of grasses and forbs, most of which were annuals (feather fingergrass, golden crownbeard, carelessweed). Perennial grasses are slowly increasing (sideoats grama, red threeawn) and perennial species indicative of overgrazing are decreasing (broom snakeweed, Sosabee et al. 1979). It may take a long time for the plot to recover to the species composition typically found in "good" rangeland in the Hills ecotype (Romme et al. 2003, Abella 2010, Bestelmeyer et al. 2004). Although recovery may be slow, the treatment clearly improved the condition of the site relative to the overgrazed reference plot.

North Plots. The North plots are in the loamy ecotype and were in fair rangeland condition. The reference plot and amendment plot before treatment were dominated by mesquite and yucca with some grasses such as vine mesquite, beardgrass, Arizona three awn, and sideoats grama. Loamy ecotypes in a mature, healthy state are usually grasslands (sideoats and blue grama) without shrubs, but are susceptible to mesquite invasion. With overgrazing and soil erosion, these ecotypes can become the mesquite/yucca/threeawn community observed at Chino in the reference plot and prior to treatment (Bestelmeyer et al. 2004). With droughts and more severe erosion, these areas can further degrade into annual-dominated communities (NRCS ecotype description).

After treatment by tilling, lime, and organic matter application, the North plot lost grass and yucca cover. Over time annual species dominated, though mesquite and the grass, vine mesquite, continued to comprise part of the community. Of the annual species, Russian thistle invaded first and died back, then lambsquarters, and lastly in 2013 carelessweed replaced lambsquarters and became abundant. Invasion by Russian thistle followed by other weedy annual species is a typical successional pattern following disturbance (Gelt 1993, Biondini et al. 1985). An increase in carelessweed also was observed on the North reference plot in 2013 and was probably due to the wet conditions of that year. Carelessweed invaded the West reference plot that year and was common in and around the phytotoxicity seed collection area (Arcadis 2017b) that year. Based on Hurley precipitation records from July through September, 2013 was similar to 2010; both years were wetter than other years of the study with the exception of 2008 (**Figure 14**). Carelessweed was more abundant in all four plots in the fall 2010 and fall 2013. In 2014, a drier year, carelessweed was not as abundant in the North plot, nor was it abundant in the seed collection area in 2016, a drier year similar to 2014 (see photolog in **Appendix C**).

Drought occurred in 2011 and 2012, which is known to favor mesquite over grasses (Bestelmeyer et al. 2014), and may have slowed recovery on the plot. Also, loamy ecotypes are prone to becoming degraded to annual-dominated communities from erosion and overgrazing (NRCS ecotype description) or drought. When the tilling and amendments were applied, the herbaceous component of the community degraded into annual competitive ruderal (e.g., pioneer) species (Redentde and Cook 1986) of thistle and lambsquarter during the early years of normal precipitation and became most dominated by the annual carelessweed species (also a ruderal) during the wet year of 2013. Based on a 2016 visit of the treated and reference plot (8 years after treatment), the treatment effects exacerbated by the drought in 2011 through 2012 and wet conditions favoring carelessweed invasion into barren areas in 2013 appear to be responsible for the degradation of the plot toward the annual-dominated state. During that visit, carelessweed was still relatively abundant and grass cover was low on the treatment plot relative to the reference plot (see photolog in **Appendix C**, with no carelessweed and more grasses observed in reference plot). Small gullies are present indicating that the plot may have eroded due to the tilling. To recover, it may require gully repair (soil addition) and seeding (NRCS ecotype description). However, erosion is also present on the reference plot, which has sustained its grasses.

West Plots. The west plots were not treated but show natural variability in community composition over time with climatic variability. The west plots are in the “Shallow” ecotype. This ecotype is a grassland with various types of gramas and ring muhly. With overgrazing, it degrades into a mesquite-dominated community (NRCS ecotype description), with an increase in broom snakeweed and ring muhly. The West plots are in fair to good rangeland condition and have very little mesquite invasion in the reference control plot and more abundant mesquite in the amendment control plot. Though the broom snakeweed shrub is common, these plots are mostly covered by grasses including sideoats grama, blue grama, and ring muhly. Similar to the other plots, rainfall increased carelessweed greatly on these plots in 2013. This supports the supposition that some of the increase in annuals on the treated plots is from rainfall as well as disturbance (**Figure 13b**). Based on field visits, the abundance of carelessweed has declined substantially on the West plots over the past several years (2014 and 2016), likely due to lower rainfall in those years (see photolog in **Appendix C**). Only the North amendment plot has maintained relatively high amounts of carelessweed.

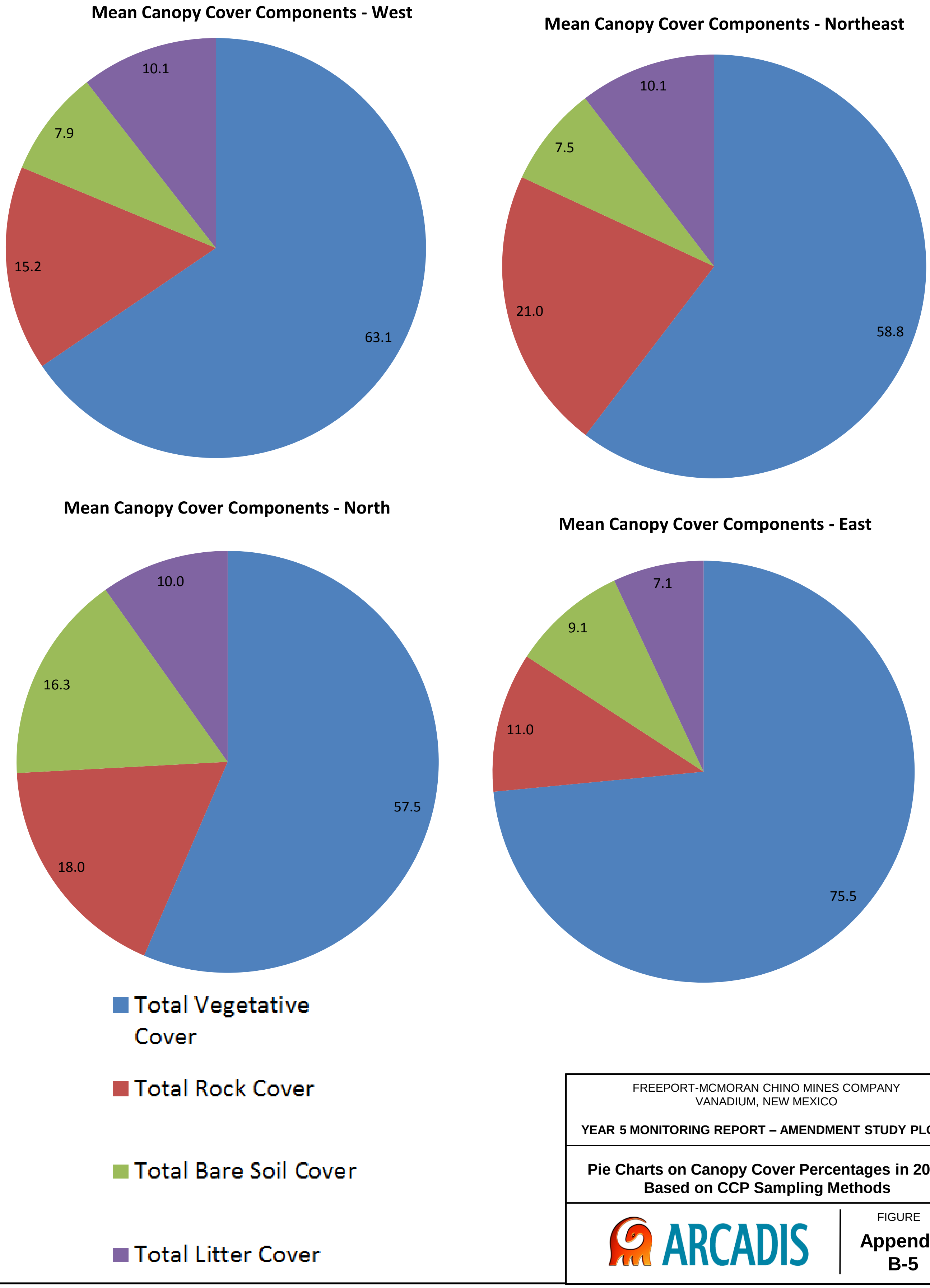
In summary, except for the East amendment plot, the treatments did not move plots forward in succession toward an improved rangeland condition. Recovery to the condition before treatment may take decades. As discussed in Appendix B-21, the improvement in the East amendment plot may mostly be from the tilling activities decompacting the hard, rocky soil of a poor rangeland plot.

Appendix B-4
Point Center Quarter Data Using the CCP Protocol to Estimate Woody Plant Density in October 2010, 2013 for Amendment Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Quadrat	2010											2013										
	Point Center Quarter Plot Number - Distance to Nearest Woody Stem (feet)										Average (shrubs/m^2)	Point Center Quarter Plot Number - Distance to Nearest Woody Stem (feet)										Average (shrubs/m^2)
	1	2	3	4	5	6	7	8	9	10		1	2	3	4	5	6	7	8	9	10	
Northeast - Lime and Organic Matter Only																						
NW Quad	1.0	15.0	3.0	1.0	4.0	3.0	3.0	2.0	4.0	-		8.0	2.0	9.0	1.0	8.0	4.0	20.0	1.0	1.0	1.0	
NE Quad	6.0	15.0	7.0	4.0	9.0	8.0	2.0	5.0	5.0	-		9.0	8.0	13.0	5.0	13.0	3.0	6.0	1.0	8.0	9.0	
SW Quad	-	17.0	9.0	1.0	10.0	3.0	7.0	8.0	5.0	-		8.0	5.0	18.0	-	-	2.0	7.0	8.0	6.0	8.0	
SE Quad	-	14.0	9.0	5.0	14.0	11.0	2.0	5.0	-	-		12.0	12.0	-	-	-	5.0	21.0	7.0	13.0	9.0	
avg (ft)	3.5	15.3	7.0	2.8	9.3	6.3	3.5	5.0	4.7	-		9.3	6.8	13.3	3.0	10.5	3.5	13.5	4.3	7.0	-	
density (shrubs/m^2)	0.88	0.05	0.22	1.42	0.13	0.28	0.88	0.43	0.49	-	0.53	0.13	0.24	0.06	1.20	0.10	0.88	0.06	0.60	0.22	-	0.39
East - Lime and Organic Matter with Tilling																						
NW Quad	18.0	2.0	-	17.0	-	18.0	7.0	5.0	-	-		-	-	-	-	20.0	11.0	7.0	21.0	10.0	2.0	
NE Quad	17.0	-	-	17.0	17.0	-	-	7.0	12.0	-		-	-	20.0	5.0	-	7.0	13.0	34.0	9.0	20.0	
SW Quad	-	-	15.0	-	-	10.0	-	-	-	-		-	-	-	-	-	-	21.0	-	-	17.0	
SE Quad	-	-	20.0	7.0	6.0	6.0	-	-	-	-		-	-	-	-	-	-	20.0	-	-	-	
avg (ft)	17.5	2.0	17.5	13.7	11.5	11.3	7.0	6.0	12.0	-		-	-	20.0	5.0	20.0	9.0	15.3	27.5	9.5	-	
density (shrubs/m^2)	0.04	2.69	0.04	0.06	0.08	0.08	0.22	0.30	0.07	-	0.40			0.03	0.43	0.03	0.13	0.05	0.01	0.12	-	0.11
North - Lime and Organic Matter with Tilling																						
NW Quad	-	11.0	8.0	2.0	12.0	6.0	1.0	13.0	8.0	10.0		14.0	7.0	11.0	1.0	16.0	12.0	11.0	6.0	5.0	6.0	
NE Quad	-	14.0	7.0	10.0	4.0	17.0	8.0	8.0	12.0	9.0		14.0	17.0	9.0	10.0	18.0	11.0	14.0	7.0	12.0	11.0	
SW Quad	9.0	7.0	10.0	11.0	13.0	9.0	18.0	3.0	9.0	10.0		7.0	8.0	1.0	2.0	1.0	5.0	-	8.0	6.0	-	
SE Quad	6.0	5.0	5.0	10.0	4.0	3.0	4.0	6.0	13.0	4.0		14.0	11.0	11.0	11.0	12.0	13.0	-	9.0	13.0	-	
avg (ft)	7.5	9.3	7.5	8.3	8.3	8.8	7.8	7.5	10.5	8.3		12.3	10.8	8.0	6.0	11.8	10.3	12.5	7.5	9.0	8.5	
density (shrubs/m^2)	0.19	0.13	0.19	0.16	0.16	0.14	0.18	0.19	0.10	0.16	0.16	0.07	0.09	0.17	0.30	0.08	0.10	0.07	0.19	0.13	0.15	0.13
West - Control																						
NW Quad	8.0	19.0	-	9.0	-	20.0	7.0	-	16.0	8.0		2.5	4.0	1.0	4.0	10.0	4.0	9.0	3.0	1.0	60.5	
NE Quad	1.0	1.0	12.0	11.0	-	-	0.0	12.0	-	6.0		4.5	4.0	8.0	7.0	12.0	17.5	7.0	8.0	15.0	27.5	
SW Quad	8.0	10.0	-	13.0	-	11.0	18.0	5.0	4.0	9.0		4.0	5.0	3.0	18.0	7.0	10.0	4.0	6.0	21.0	1.0	
SE Quad	10.0	13.0	10.0	2.0	20.0	14.0	20.0	12.0	7.0	6.0		6.5	16.5	4.0	4.0	11.0	16.0	5.0	11.0	6.0	9.0	
Average (ft)	6.8	10.8	11.0	8.8	20.0	15.0	11.3	9.7	9.0	7.3		4.4	7.4	4.0	8.3	10.0	11.9	6.3	7.0	10.8	24.5	
Density (shrubs/m^2)	0.24	0.09	0.09	0.14	0.03	0.05	0.09	0.12	0.13	0.20	0.11	0.56	0.20	0.67	0.16	0.11	0.08	0.28	0.22	0.09	0.02	0.26

Notes:
m^2 - meters squared



FREEPORT-MCMORAN CHINO MINES COMPANY
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YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Pie Charts on Canopy Cover Percentages in 2013
Based on CCP Sampling Methods

ARCADIS

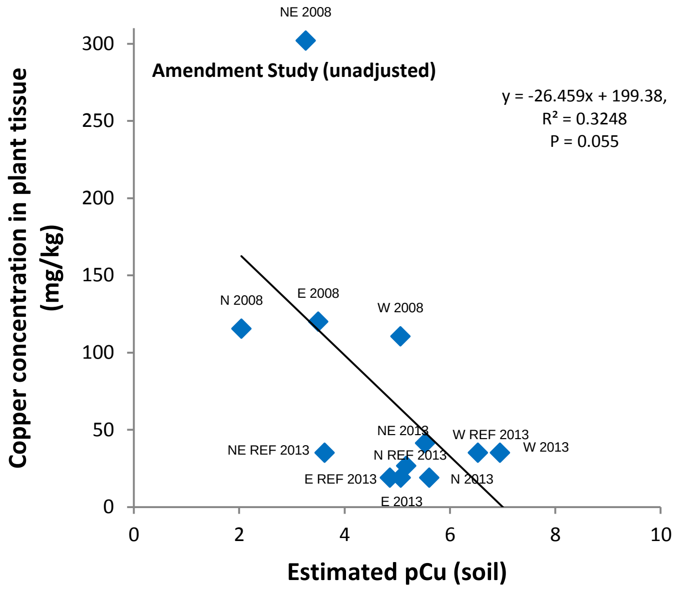
FIGURE
Appendix
B-5

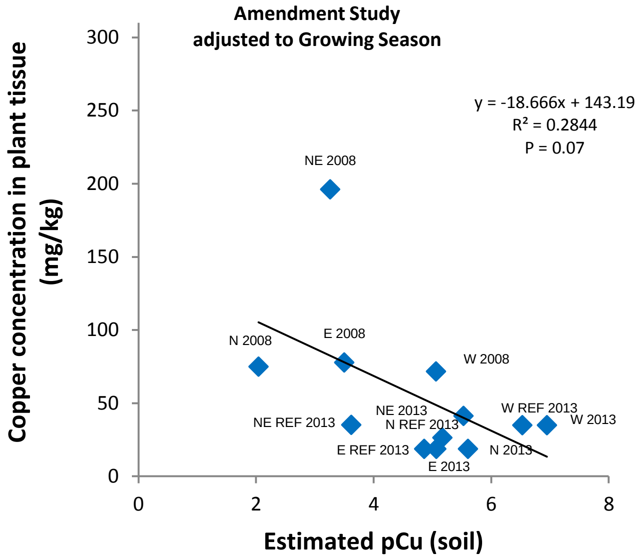
Appendix B-6
Relationship between pCu and Copper Concentration in Unwashed Tissue

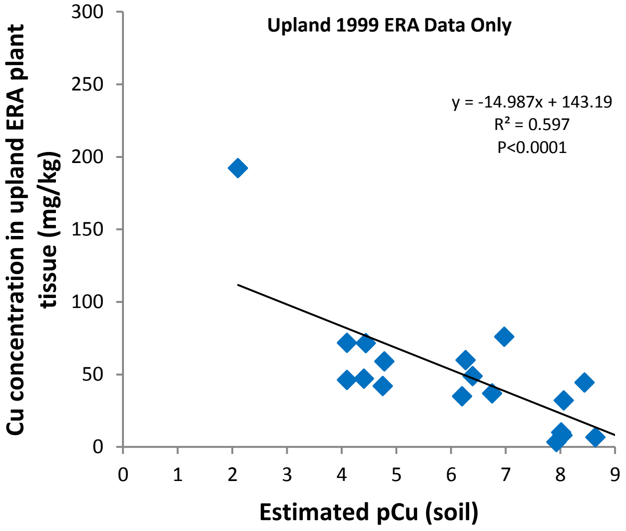
Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location	Year	Tissue Cu (mg/kg)	Tissue Cu adjusted (mg/kg)	pCu
East Amendment	early 2008	120.00	78.00	3.50
East Amendment	2013	18.98	18.98	5.07
East Reference	2013	18.97	18.97	4.86
North Amendment	early 2008	115.50	75.08	2.04
North Amendment	2013	19.00	19.00	5.61
North Reference	2013	26.60	26.60	5.17
Northeast Amendment	early 2008	302.00	196.30	3.26
Northeast Amendment	2013	41.40	41.40	5.53
Northeast Reference	2013	35.23	35.23	3.62
West Amendment	early 2008	110.62	71.90	5.06
West Amendment	2013	35.20	35.20	6.95
West Reference	2013	35.19	35.19	6.53
Average of ERA plots	1999	76.00	76.00	4.48
Average of ERA Reference	1999	8.00	8.00	8.20

Note: pCu was estimated for March 2008 as if it were pre-white rain using 2006 pH data (in Table 1) because it is assumed March 2008 dormant plant tissues still represent pre-white rain condition. Early 2008 data are biased high relative to 2013 data in this table and associated graph because they represent dormant season tissue and other data represent growing season tissue.







Notes: Top graph shows amendment study data unadjusted for dormancy bias. Graph at bottom to left adjusted March 2008 tissue concentrations down by 35% to approximate growing season concentrations (whereas top graph shows dormant season concentrations for these plots). Graph at bottom right uses foliage and seeds combined (assuming 85% is foliage for grass and 95% for mesquite) to estimate tissue concentration from ERA data for upland plots ERA 1 to ERA 21. pCu is calculated. Data are original unwashed data, and would shift downward slightly if adjusted to washed by multiplying concentrations by 0.9282.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Relationship Between pCu and Copper Concentration in Unwashed Tissue.

ARCADIS

FIGURE
Appendix B-7

Appendix B-8
Average Soil Chemistry and Plant Community Percent Cover as Used for Canonical Correspondence Analysis (CCA)

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot Characteristics						Soil Chemistry Averages						Plant Community Average Percent Cover								
Plot Name	Time[1]	Year[2]	Amendment[3]	Disturbance Code[4]	Till/No-till[5]	pH	Cu	TOC	Soluble Cu	pCu	C:N	ACAN	ACSP	ALMA	ALWR	AMPA	ARAD	ARAR	ARDI	ARPU
E_1009	C	3	A	4	T	7.25	798	1.5	0.26	6.49	9	0.25	0	0	0	0	0	0	0	0
E_1010	E	5	A	2	T	6.28	1281	1.34	0.44	4.95	11	11.75	0	0	0	19	0	0	0	0
E_1013	F	6	A	1	T	7.04	857	1.5	0.17	6.14	7	0	0	0	0	20.5	0	0	0	1.5
E_1208	B	2	A	5	T	6.24	1019	1.3	0.31	5.22	18	5.25	0	0	0	0	0	0	0	0
E_410	D	4	A	3	T	7.24	892	1.52	0.3	6.31	10	1.5	0	0	0	0	0	0	0	0
E_508	A	1	B	0	NT	4.55	1118	0.93	0.1	3.5	16	0	0	0	0	0	0	0	0	0
ER_1010	E	5	R	0	NT	4.57	1243	0.81	6.22	3.4	11	10.5	0	0	0	0	0	0	0	0
ER_1013	F	6	R	0	NT	5.95	1100	0.65	1.12	4.86	9	0	0	0	0	38	0	0	0	0
ER_410	D	4	R	0	NT	4.16	1032	0.81	3.71	3.23	10	3	0	0	0	0	0	0	0	0
N_1009	C	3	A	4	T	6.11	1519	1.59	0.24	4.65	12	0	0	0	0	0	0	0	0	0
N_1010	E	5	A	2	T	6.57	873	0.98	0.08	5.73	18	1.5	0	0	0	5.25	0	0	0	0
N_1013	F	6	A	1	T	6.18	972	1.17	0.59	5.43	14	0	0	0	0	50.5	0	0	0	0
N_1208	B	2	A	5	T	6.59	1779	1.95	0.77	5.04	23	1.5	0	0	0	6.75	0	0	0	0
N_410	D	4	A	3	T	6.68	1042	1.23	0.17	5.65	11	0	0	0	0	1.5	0	0	0	0
N_508	A	1	B	0	NT	3.69	1982	1.21	0.26	2.04	19	0	0	0	0	0	0	10.5	0	0
NE_1009	C	3	A	4	NT	5.42	2802	1.41	3.71	3.38	9	11.75	0	0	0	0	0	0	0	0
NE_1010	E	5	A	2	NT	5.5	1851	1.01	3.41	3.86	15	11.75	0	0	3	0	0	0	0	0
NE_1013	F	6	A	1	NT	5.7	2453	1.83	7.42	3.72	12	38	0	0	6.75	20.5	1.5	0	0	0
NE_1208	B	2	A	5	NT	3.94	2462	1.15	9.65	2.04	16	29.25	0	0	0	0	0	0	0	0
NE_410	D	4	A	3	NT	5.68	1456	1.21	0.26	4.37	12	10.25	0	0	3	0	0	0	0	0
NE_508	A	1	B	0	NT	5.41	2767	1.05	0.16	3.26	21	5.25	0	0	5.25	0	0	0	0	0
NER_1010	E	5	R	0	NT	4.9	3423	1.34	2.8	2.66	14	38	0	0	0	0	0	0	0	0
NER_1013	F	6	R	0	NT	5.35	2023	1.1	8.65	3.62	10	38	0	0	0	0	0	0	0	0
NER_410	D	4	R	0	NT	5.76	903	1.03	0.08	4.87	28	38	0	0	0	0	0	0	0	0
NR_1010	E	5	R	0	NT	5.56	1280	0.73	0.69	4.29	28	0	3	0	0	0.5	0	0	0	0
NR_1013	F	6	R	0	NT	5.79	760	0.85	0.39	5.17	9	0	0.5	0	0	10.5	0	0	0	0
NR_410	D	4	R	0	NT	5.26	946	0.82	0.55	4.35	24	0	0	0	0	0	0	0	0	0
W_1009	C	3	A	0	NT	7.56	1029	0.95	0.04	6.48	9	0	0	0	0	0	0	0.5	0	1.5
W_1010	E	5	A	0	NT	8.28	1066	1.09	0.02	7.03	11	0	3	0	0	0.5	0	6.75	1.5	10.25
W_1013	F	6	A	0	NT	7.68	1767	1.13	0.03	5.96	10	0	1.5	0.25	0	38	1.5	0.25	0	5.25
W_1208	B	2	A	0	NT	7.39	1379	1.1	0.02	5.91	29	0	0	0	0	0	0	3	0	5.25
W_410	D	4	A	0	NT	7.71	691	1.13	0.01	7.01	10	0	0.25	1.5	0	0	0	10.5	0	5.25
WR_1010	E	5	R	0	NT	8.48	1135	1.4	0.01	7.15	16	0	0.5	0	0	0	0	10.5	3	0
WR_1013	F	6	R	0	NT	7.64	1021	1.15	0.03	6.53	12	0	0	0	0	38	0	10.5	0	0
WR_410	D	4	R	0	NT	8.03	474	1.21	0.01	7.73	10	0	3	3	0	0	0	0	0	0

Notes:

1 - A = 5/2008 soil & 3/2008 vegetation sampling, B = December 2008 for both, C = October 2009, D = April 2010, E = October 2013. Vegetation sampling events "A,B, and C" are missing for reference plots (R added to cardinal directionabbreviated plot name) because no reference soil data available in 2008 and 2009. No "A" for West plot amendment because no soil lab data available for West plots in May 2008.

2 - Years 1 to 6 correspond to years 2008 to 2013

3 - Amended plot (A), reference plot (R), Amendment plot prior to amendment (B)

4 - Disturbance codes rank areas by the amount of disturbance from 5 (maximum disturbance immediately post-amendment/tilling) to 1 (5-years post-disturbance). Areas ranked 0 were pre-disturbance or control plots.

5 - Tilled (T), No-till (NT)

Codes for species are in Appendix B-9. Species cover percentages are non-CCP protocols.

Appendix B-8
Average Soil Chemistry and Plant Community Percent Cover as Used for Canonical Correspondence Analysis (CCA)

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Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plant Community Average Percent Cover

ATCA	ATHY	ATSP	BAAB	BAPT	BOBA	BOCU	BOGR	CAHU	CEMO	CHAL	CHER	CHLE	CHVI	DAPO	DAWH	DESP	DISP	DYPA	GUSA	HELO
0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	0
0	0	0	0	0	0	1.5	0	0	0	1.5	0	5.5	0	0	0	0	0	0	1.75	0
0	0	1.5	0	0	0	3	0	0	0	0	0	0	10.25	0	0	0	0	0	5.25	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.25	0
0	0	0	0	0	0	0	0	0	0	10.5	0	0	0	0	0	0	0	0	10.5	0
0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.5	0
0	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	24.25	0	24.25	0	0	0	0	0	0	0	1.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	0	0	1.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	0	0	0	1.5	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0.25	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	10.5	0	29.25	0.25	0	0	0	0	0	0.25	0	0	0
0	0	0	0	0	0	1.5	0	1.5	0.25	5.25	0	0	0	1.5	0	0	0	0	0	0
0	0.25	0	0	0	0	5.25	0	10.5	0	0	1.5	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	20.5	0	0	1.5	0	0	0	0	0	0	0	0	0
5.25	0	0	0	1.5	0	15.5	10.25	0	0	0	0	0	0	0	3	1.5	0	0	0	0
0	0	0	0	0	0	3	0	3	0	3	0	0	0	0	3	10.5	0	0	0	0
0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	10.5	0	0	0	0
0	0	0	0	0	0	10.5	0	0	0	0	0	0	0	0	3	3	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	5.5	20.5	0	0	0	0	0	0	0	0	0	0	0	0	20.5	0
0	0	0	0	0	5.25	36.75	1.5	0	0	0	0	0	0	0	0	0	0	0	38	0
0	0	0	1.5	0	1.5	36.75	5	0	0	0	0	0	0	1.75	0	0	0	0.25	0	0
0	0	0	0	0	5.25	20.5	1.5	0	0	0	1.5	0	0	0	0	0	0	0	29.25	0
0	0	0	0	0	5.25	33	0	0	0	0	1.5	0	0	0	0	0	0	0	38	0
0	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	10.5	0
0	0	0	0	0	0	38	0	0	0	0	3	0	0	0	0	0	0	0.5	3	0
0	0	0	0	0	0	10.5	10	0	0	0	10.5	0	0	0	0	0	0	0	10.5	0

Appendix B-8
Average Soil Chemistry and Plant Community Percent Cover as Used for Canonical Correspondence Analysis (CCA)

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plant Community Average Percent Cover																				
HIBE	**HOGL**	**LYPA**	**MATA**	**MELE**	**MEMU**	**MIBI**	**MUSP**	**MUTO**	**OPSP**	**OXLA**	**PAOB**	**PECI**	**PLMU**	**PRGL**	**SATR**	**SEBA**	**SESP**	**SIAB**	**SOEL**	**SPAN**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.75	0.5	0	1.5	0	10.25	0
0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	19	0	5.25	0	5.5	0.25
0	6.75	0	0	0	0	0	0	0	0	0	0	0	0	3	1.5	0	50.5	0	11.75	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	50.5	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.75	0	0	3	0	1.5	0
0	0	0	0	0	0	0	0	0.25	0	0	0	0	0	50.5	0	0	0	0	0	0
0	0	0	3	0	3	0	0	0	0	0	0	0	0	20.5	10.5	0	0	0	3	0
0	20.5	0	0	0	0	0	0	0	0	0	0	0	0	20.5	3	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.5	0	0	0	0	0	0
0	0	0	1.5	0	0	0	0	0	0	0	20.5	0	0	20.5	1.5	0	0	0	11.75	0
0	0	0	3	0	6.75	0	0	0	0	0	20.5	0	0	38	5.25	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	29.25	0	0	29.25	5.25	0	0	0	1.5	0
0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	20.5	41.75	0	0	0	6.75	0
0	0	0	1.5	0	0	0	0	0	0	0	20.5	0	0	20.5	1.5	0	0	0	0.25	0
0	0	0	0	0	0	0	0	0	0	0	15.5	0	0	15.5	0	0	0	0	0	0
1.5	0	6.75	0	0	0	0	0	0	0	0	1.5	0	0	29.25	0	0	0	0	1.5	0
1.5	0	5.25	0	0	0	0	0	0	0	0	1.5	0	0	20.5	1.5	0	0	0	5.25	0
0	0	10.25	0	0	0	0	0	0	0	0	0.25	0	1.5	19	0	0	0	0	6.75	0
0	0	5.25	0	0	0	0	0	0	0	0	0	0	0	20.5	0	0	0	0	0	0
0	0	6.75	0	0	0	0	0	0	0	0	0	0	5.25	24.25	0	0	0	0	1.5	0
0	0	0	0	0	0	1.5	0	0	1.5	0	0	0	0	11.75	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	20.5	0	3	38	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	20.5	0	3	38	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	20.5	0	3	38	0	0	0	0	3	0
0	0	0	3	0	0	0	0	0	0	0	3	0	0	38	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	10.5	0	0	38	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.5	0	0	0	0	3	0
0	0	0	0	0	0	1.75	0	15.5	0.25	0	0	0	0	15.5	0	1.5	0	0	1.75	0
0	0	0	0	0	0	0	0	24.25	0	0	6.75	0	0	29.25	0	1.75	0.25	0	3	0
0	0	0	0	0.5	0	1.5	0	6.75	0	0.25	6.75	0	0	29	0	1.5	0	1.5	3	0
0	0	0	0	0	0	0.25	1.5	11.75	0	1.75	6.75	0	0	15.5	0	0	0	0	0	0
0	0	0	0	0	0	6.75	0	20.5	0	0	1.5	0	0	29.25	0	1.5	0	0	3	0
0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0.5	0
0	0	0	0	0.5	0	3	0	3	0	3	3	0	0	0	0	3	0	0.5	3	0
0	0	0	0	0	0	10.5	0	0	0	0.5	3	0	0	3	0	0	0	0	3	0

Appendix B-8
Average Soil Chemistry and Plant Community Percent Cover as Used for Canonical Correspondence Analysis (CCA)

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Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plant Community Average Percent Cover						
SPCO	**SPSP**	**VEEN**	**XAGR**	**YUEL**	**ZIGR**	**ZIOB**
0	0	50.5	0	0	0	0
1.75	0	63	0	0	0	0
0	0	50.5	0	0	0	0
0	0	29.25	0	0	0	0
3	0	1.75	0	0	0	0
0	0	0	0	0	0	0
0	0.5	3	0	0	0	0
0	0	10.5	0	0	3	0
0	0	0	0	0	0	0
10.5	0	0	0	10.5	0	0
6.75	0	0	0	1.5	0	0
0	0	0	0	1.5	0	0
1.5	0	0	0	1.5	0	0
3	0	0	0	1.5	0	0
0	0	0	0	15.5	0	0
0	0	0	0	0	0	19
1.5	0	0	1.5	0.25	0	19
1.5	0	1.5	0	1.5	0	19
0	0	0	0	0	0	19
1.5	0	0	0	0	0	19
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	10.5	0	0
0	0	0	0	20.5	0	0
0.5	0	0	0	20.5	0	0
0	0	0	0	1.5	0	0
0	0	0	5.5	1.5	0	0
0	0	0	0	0	1.5	0
0	0	0	0	0.25	0	0
0	0	0	0	1.5	0	0
0	0	0	0.5	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Appendix B-9
Species Found on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species Common Name	Species Scientific Name	Species Code	Life Form	Season
Whiteball acacia	*Acacia angustissima*	*ACAN*	Forb	
Acacia seedling	*Acacia sp.*	*ACSP*	Forb	
Wild onion	*Allium macropetalum*	*ALMA*	Forb	
Bee brush	*Aloysia wrightii*	*ALWR*	Shrub	
Carelessweed	*Amaranthus palmeri*	*AMPA*	Forb	
Crested anoda	*Anoda cristata*	*ANCR*	Forb	
Arizona three awn	*Aristida arizonica*	*ARAR*	Graminoid	warm
Six week three-awn	*Aristida adscensionis*	*ARAD*	Graminoid	warm
Purple three-awn	*Aristida purpurea*	*ARPU*	Graminoid	warm
Spreading three-awn	*Aristida divaricata*	*ARDI*	Graminoid	warm
Vetch species	*Astragalus sp*	*ASSP*	Forb	
Four wing saltbush	*Atriplex canescens*	*ATCA*	Shrub	
Desert holly	*Atriplex hymenelytra*	*ATHY*	Shrub	
Unidentified saltbush	*Atriplex sp.*	*ATSP*	Shrub	
Yerba de pasmo	*Baccharis pteronoides*	*BAPT*	Shrub	
Hairyseed bahia	*Bahia absinfolia*	*BAAB*	Forb	
Beardgrass	*Bothriochloa barbinodis*	*BOBA*	Graminoid	warm
Side-oats grama	*Bouteloua curtipendula*	*BOCU*	Graminoid	warm
Blue grama	*Bouteloua gracilis*	*BOGR*	Graminoid	warm
Sixweeks grama	*Bouteloua barbata*	*BOBA2*	Graminoid	warm
False mesquite	*Calliandra humilis*	*CAHU*	Forb	
Mountain mahogany seedling	*Cercocarpus montanus*	*CEMO*	Shrub	
Baby aster	*Chaetopappa ericoides*	*CHER*	Forb	
Lambsquarters	*Chenopodium album*	*CHAL*	Forb	
Narrowleaf goosefoot	*Chenopodium leptophyllum*	*CHLE*	Forb	
Feather finger-grass	*Chloris virgata*	*CHVI*	Graminoid	warm
Knifeleaf condalia	Condalia spathulata	*COSP*	Shrub	
Bearded dalea	*Dalea pogonathera*	*DAPO*	Forb	
Sotol	*Dasylirion wheeleri*	*DAWH*	Shrub	
Tick clover	*Desmodium sp.*	*DESP*	Forb	
Purple or hoary aster	*Dieteria sp.*	*DISP*	Forb	
Dogweed	*Dyssodia papposa*	*DYPA*	Forb	
Snakeweed	*Gutierrezia sarothrae*	*GUSA*	Forb	
Annual goldeneye	*Heliomeris longifolia var. annua*	*HELO*	Forb	
Curly mesquite	*Hilaria belangeri*	*HIBE*	Graminoid	warm
Hog potato	*Hoffmannseggia glauca*	*HOGL*	Forb	
Crestrib morning glory	*Ipomoea costellata*	*LPCO*	Forb	
Rabbit thorn	*Lycium pallidum*	*LYPA*	Shrub	
Slender goldenweed	*Machaeranthera gracilis*	*MAGR*	Forb	
Tansy aster	*Machaeranthera tanacetifolia*	*MATA*	Forb	
Blackfoot	*Melampodium leucanthum*	*MELE*	Forb	
Many flowered blazing star	*Mentzelia multiflora*	*MEMU*	Forb	
Wait-a-minute	*Mimosa biuncifera*	*MIBI*	Shrub	
Unidentified Muhlenbergia	*Muhlenbergia sp.*	*MUSP*	Graminoid	warm

Appendix B-9
Species Found on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species Common Name	Species Scientific Name	Species Code	Life Form	Season
Ring muhly	*Muhlenbergia torreyi*	*MUTO*	Graminoid	warm
Prickly pear	*Opuntia sp.*	*OPSP*	Shrub	
Purple loco	*Oxytropis lambertii*	*OXLA*	Forb	
Vine mesquite	*Panicum obtusum*	*PAOB*	Graminoid	warm
Buffelgrass	*Pennisetum ciliare*	*PECI*	Graminoid	warm
Tobosa	*Pleuraphis mutica*	*PLMU*	Graminoid	warm
Honey mesquite	*Prosopis glandulosa*	*PRGL*	Shrub	
Russian thistle	*Salsola tragus*	*SATR*	Forb	
Twin leaf senna	*Senna bauhinioides*	*SEBA*	Forb	
Bristlegrass	*Setaria sp.*	*SESP*	Graminoid	warm
Plains Bristlegrass	*Setaria macrostachya*	*SESP*	Graminoid	warm
Green Bristlegrass	*Setaria viridis*	*SESP*	Graminoid	warm
Spreading fan petals	*Sida abutifolia*	*SIAB*	Forb	
Silverleaf nightshade	*Solanum elaeagnifolium*	*SOEL*	Forb	
Narrowleaf globemallow	*Sphaeralcea angustifolia*	*SPAN*	Forb	
Scarlet globe mallow	*Sphaeralcea coccinea*	*SPCO*	Forb	
Dropseed sp.	*Sporobolus sp.*	*SPSP*	Graminoid	warm
Sand Dropseed	*Sporobolus cryptandrus*	*SPCR*	Graminoid	warm
Spike Dropseed	*Sporobolus contractus*	*SPCO*	Graminoid	warm
Golden crownbeard	*Verbesina encelioides*	*VEEN*	Forb	
Slender goldenweed	*Xanthisma gracile*	*XAGR*	Forb	
Soap tree yucca	*Yucca elata*	*YUEL*	Shrub	
Wild zinnia	*Zinnia grandiflora*	*ZIGR*	Forb	
Gray thorn	*Ziziphus obtusifolia*	*ZIOB*	Shrub	

Appendix B-10
Percentage of Canopy Cover in Each Life Form in October 2010 and 2013 using CCP Protocol

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Life Form	2010				2013			
	West	North	Northeast	East	West	North	Northeast	East
Annual Forb	7.0	63.4	22.0	83.1	26.6	82.0	8.3	74.7
Perennial Forb	15.6	8.0	41.0	3.9	18.9	4.3	61.2	3.7
Annual Grass	0.4	0.0	0.0	2.1	2.1	0.0	0.0	12.8
Perennial Grass	66.8	14.6	2.0	4.5	26.8	6.3	1.5	0.7
Shrub	10.1	13.9	35.0	6.5	21.3	8.4	29.0	3.3

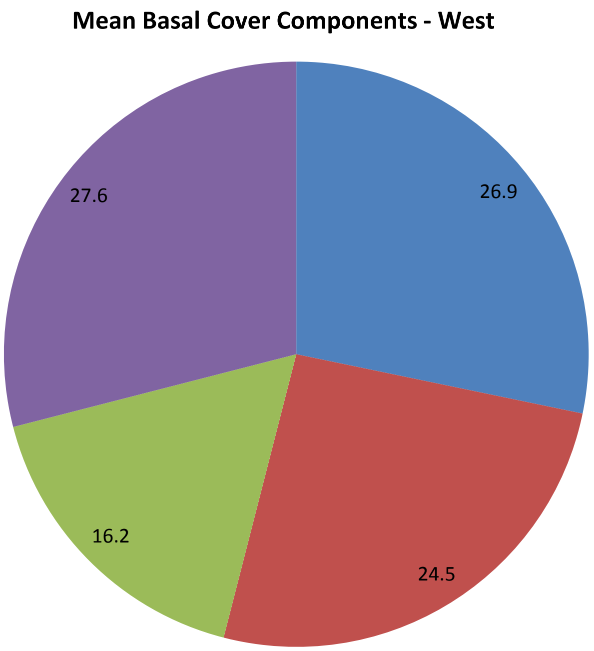
Appendix B-11
Cover, Richness, Shrub Density on Amendment Plots in October 2010 and 2013 using CCP Protocol

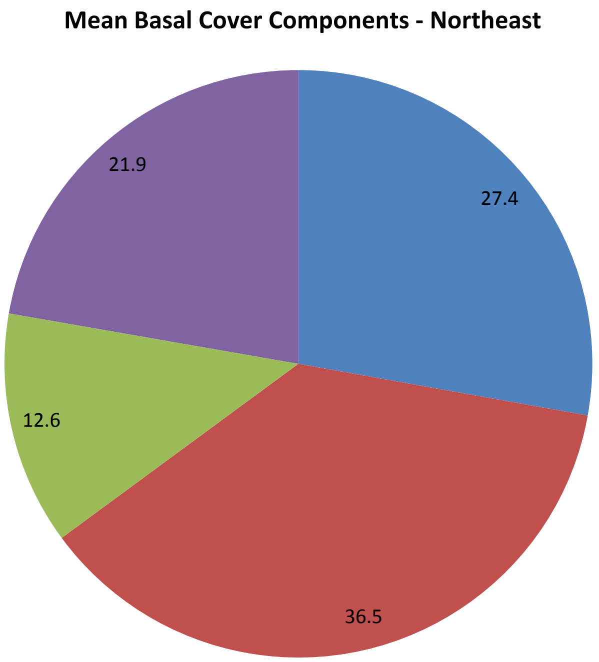
Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

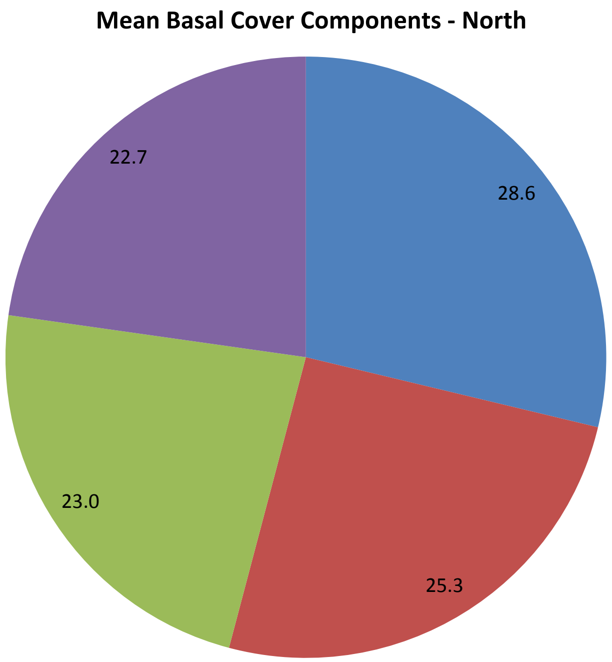
Cover	Count	2010						2013					
		Canopy Cover			Basal Cover			Canopy Cover			Basal Cover		
		Mean	S.D.	90% CI	Mean	S.D.	90% CI	Mean	S.D.	90% CI	Mean	S.D.	90% CI
Northeast - Lime and Organic Matter Only													
Total Vegetative Cover (%)	20	45.5	23.8	45.5 ± 8.7	6.8	4.1	6.8 ± 1.5	61.8	15.3	61.8 ± 5.64	28.8	11.1	28.8 ± 4.08
Total Rock Cover (%)	20	31.9	21.8	31.9 ± 8.0	48.7	26.9	48.7 ± 9.9	22.1	11.8	22.1 ± 4.35	38.4	14.3	38.4 ± 5.28
Total Bare Soil Cover (%)	20	8.5	13.7	8.5 ± 5.1	16.8	19.1	16.8 ± 7.0	7.9	5.0	7.9 ± 1.83	13.4	5.4	13.4 ± 1.98
Total Litter Cover (%)	20	9.4	9.0	9.4 ± 3.3	24.9	25.1	24.9 ± 9.2	10.7	8.4	10.7 ± 3.09	23.0	14.1	23.0 ± 5.18
East - Lime and Organic Matter with Tilling													
Total Vegetative Cover (%)	20	57.9	22.7	57.9 ± 8.4	9.8	4.4	9.8 ± 1.6	79.3	20.3	79.3 ± 7.46	42.9	15.3	42.9 ± 5.63
Total Rock Cover (%)	20	11.2	10.4	11.2 ± 3.8	25.4	13.7	25.4 ± 5.0	11.8	13.0	11.8 ± 4.76	18.8	15.2	18.8 ± 5.58
Total Bare Soil Cover (%)	20	19.8	13.1	19.8 ± 4.8	43.4	17.1	43.4 ± 6.3	10.0	9.7	10.0 ± 3.57	15.8	9.5	15.8 ± 3.48
Total Litter Cover (%)	20	6.8	4.9	6.8 ± 1.8	18.6	8.5	18.6 ± 3.1	7.5	3.4	7.5 ± 1.27	25.8	10.0	25.8 ± 3.69
North - Lime and Organic Matter with Tilling													
Total Vegetative Cover (%)	20	47.4	24.9	47.4 ± 9.1	10.1	10.7	10.1 ± 3.9	57.5	21.0	57.5 ± 7.72	28.6	15.0	28.6 ± 5.53
Total Rock Cover (%)	20	17.7	12.7	17.7 ± 4.7	30.0	15.9	30 ± 5.9	18.0	14.8	18.0 ± 5.45	25.3	14.2	25.3 ± 5.22
Total Bare Soil Cover (%)	20	28.0	17.4	28.0 ± 6.4	48.4	18.4	48.35 ± 6.8	16.3	8.6	16.3 ± 3.18	23.0	9.4	23.0 ± 3.45
Total Litter Cover (%)	20	6.8	6.0	6.8 ± 2.2	9.9	9.0	9.85 ± 3.3	10.0	4.6	10.0 ± 1.69	22.7	9.0	22.7 ± 3.30
West - Control													
Total Vegetative Cover (%)	20	47.1	18.3	47.1 ± 6.7	24.6	10.6	24.6 ± 3.9	66.3	16.2	66.3 ± 5.96	28.3	7.3	28.3 ± 2.69
Total Rock Cover (%)	20	24.5	21.3	24.5 ± 7.8	34.0	28.4	34.0 ± 10.4	16.0	10.0	16.0 ± 3.66	25.8	15.2	25.8 ± 5.61
Total Bare Soil Cover (%)	20	18.4	17.6	18.4 ± 6.5	30.0	28.1	30 ± 10.3	8.3	6.1	8.3 ± 2.24	17.0	9.9	17.0 ± 3.65
Total Litter Cover (%)	20	5.0	7.6	5.0 ± 2.8	7.2	14.1	7.2 ± 5.2	10.7	8.5	10.7 ± 3.12	29.0	14.0	29.0 ± 5.15

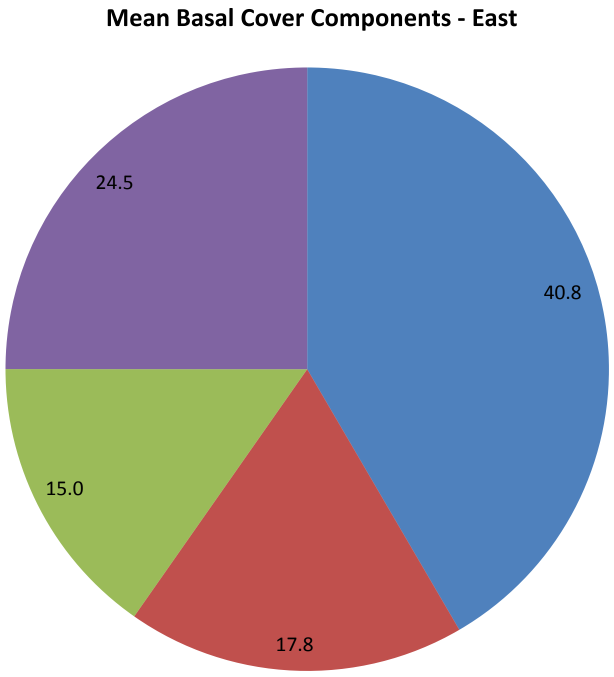
		2010			2013		
Richness and Shrub Density	**Count**	**Mean**	**S.D.**	**90% CI**	**Mean**	**S.D.**	**90% CI**
Northeast - Lime and Organic Matter Only							
Species Richness (no.)	20	2.5	1.3	2.5 ± 0.5	3.5	1.2	3.5 ± 0.44
Shrub Density (shrubs/m^2)	20	0.6	0.6	0.6 ± 0.2	0.7	0.7	0.7 ± 0.26
East - Lime and Organic Matter with Tilling							
Species Richness (no.)	20	4.1	1.8	4.1 ± 0.7	3.5	0.9	3.3 ± 0.33
Shrub Density (shrubs/m^2)	20	0.2	0.4	0.2 ± 0.2	0	NA	NA
North - Lime and Organic Matter with Tilling							
Species Richness (no.)	20	4.5	1.5	4.5 ± 0.57	2.4	0.9	2.4 ± 0.32
Shrub Density (shrubs/m^2)	20	0.5	0.6	0.5 ± 0.22	0.3	0.5	0.3 ± 0.17
West - Control							
Species Richness (no.)	20	6.9	3.0	6.9 ± 1.1	6.8	2.2	6.8 ± 0.82
Shrub density (shrubs/m^2)	20	0.5	0.7	0.5 ± 0.3	0.6	0.7	0.6 ± 0.25

Notes:
S.D. - Standard Deviation
CI - Confidence interval
NA - Value not applicable
m^2 - square meters
no. - number of species









🟦 Total Vegetative Cover

🟥 Total Rock Cover

🟩 Total Bare Soil Cover

🟪 Total Litter Cover

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Pie Charts on Basal Cover Percentages in 2013 Based on CCP Sampling Methods

ARCADIS

FIGURE
Appendix B-12

Appendix B-13
Percent Total Cover by Vegetation/Bare Soil and Species Richness in Each Amendment and Reference Plot (0.1 acre plot)

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot	**Pecent Cover**											**Species Richness**					
	Vegetation						**Bare Soil**										
	Mar-08	**Dec-08**	**Oct-09**	**Apr-10**	**Oct-10**	**Oct-13**	**Dec-08**	**Oct-09**	**Apr-10**	**Oct-10**	**Oct-13**	**Mar-08**	**Dec-08**	**Oct-09**	**Apr-10**	**Oct-10**	**Oct-13**
Northeast - Lime and Organic Matter Only																	
Northeast 1 amendment	63	63	63	63	63	63	38	38	38	38	38	8.0	5.0	4.0	5.0	8.0	12
Northeast 2 amendment	85	63	63	63	63	63	38	38	38	38	38	8.0	6.0	7.0	9.0	13	10
Average	74	63	63	63	63	63	38	38	38	38	38	8.0	5.5	5.5	7.0	11	11
Northeast Reference	85	85	85	63	63	63	21	21	21	38	38	6.0	7.0	7.0	8.0	10	8.0
East - Lime and Organic Matter with Tilling																	
East 1 amendment	63	85	63	21	63	85	21	38	63	38	10	1.0	4.0	5.0	5.0	11	11
East 2 amendment	63	98	85	21	85	98	0.5	21	63	11	3.0	4.0	2.0	6.0	8.0	11	8.0
Average	63	92	74	21	74	92	11	29	63	24	6.5	2.5	3.0	5.5	6.5	11	9.5
East Reference	63	38	63	38	38	63	63	38	63	63	38	3.0	6.0	4.0	4.0	11	9.0
North - Lime and Organic Matter with Tilling																	
North 1 amendment	63	85	38	38	63	85	21	63	63	38	20	4.0	5.0	6.0	7.0	11	6.0
North 2 amendment	63	63	63	38	63	85	38	38	38	38	20	7.0	7.0	7.0	9.0	10	4.0
Average	63	74	51	38	63	85	29	51	51	38	20	5.5	6.0	6.5	8.0	11	5.0
North Reference	38	63	63	38	38	63	38	38	38	63	38	3.0	10	6.0	5.0	8.0	6.0
West - Control																	
West 1 amendment	85	85	85	85	85	63	21	21	11	21	38	7.0	9.0	8.0	10	14	15
West 2 amendment	85	85	63	63	63	85	21	21	38	38	20	10	13	13	14	14	15
Average	85	85	74	74	74	74	21	21	24	29	29	8.5	11	11	12	14	15
West Reference	63	85	85	85	63	63	21	21	11	38	38	6.0	10	9.0	11	10	14

Notes:
March 2008 data for the north and northeast plots was sampled in a slightly different location than data sampled from December 2008 to 2013.

Appendix B-14
Species Cover and Frequency in October 2010 and October 2013 in Amendment Plots using CCP Protocol

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species		2010			2013		
Common Name	**Scientific Name**	**Mean Basal Cover (%)**	**Mean Canopy Cover (%)**	**Frequency**	**Mean Basal Cover (%)**	**Mean Canopy Cover (%)**	**Frequency**
Northeast - Lime and Organic Matter Only							
Forbs							
Acacia seedling	*Acacia sp.*	T	6.5	2	-	-	-
Carelessweed	*Amaranthus palmeri*	-	-	-	5.0	14.5	8
Lambsquarters	*Chenopodium album*	3.4	14.6	12	1.3	3.7	6
Silverleaf nightshade	*Solanum elaeagnifolium*	T	3.5	4	0.6	2.4	5
Broom snakeweed	*Gutierrexia sarothrae*	T	5.0	1	-	-	-
Tick clover	*Desmodium sp.*	T	15.0	2	T	3.0	1
Scarlet globe mallow	*Sphaeralcea coccinea*	-	-	-	T	3.0	1
Ivyleaf ground cherry	*Physalis hederifolia*	-	-	-	5.0	10.0	1
Wild zinnia	*Zinnia grandiflora*	-	-	-	1.5	3.5	2
Whiteball acacia	*Acacia angustissima*	5.2	27.9	14	15.5	37.8	20
Graminoids							
Bristlegrass	*Setaria sp.*	T	T	1	T	T	1
Curly mesquite	*Hilaria belangeri*	1.5	3.5	2	-	-	-
Tobosa	*Pleuraphis mutica*	-	-	-	7.5	7.5	2
Vine mesquite	*Panicum obtusum*	5.0	7.0	1	5.0	5.0	1
Shrubs							
Bee brush	*Aloysia wrightii*	5.0	22.5	2	8.3	21.7	3
Desert holly	*Atriplex hymenelytra*	3.0	20.0	1	-	-	-
Lote Bush	*Ziziphus obtusifolia*	9.0	56.7	3	-	-	-
Honey mesquite	*Prosopis glandulosa*	10.0	33.3	7	10.2	22.5	15
Rabbit thorn	*Lycium pallidum*	-	-	-	2.5	16.5	2
Prickly pear	*Opuntia sp.*	T	3.0	1	-	-	-
Unknown							
Unknown seedling		-	-	-	T	1.0	2
East - Lime and Organic Matter with Tilling							
Forbs							
Acacia seedling	*Acacia sp.*	T	3.0	3	2.5	6.5	2
Carelessweed	*Amaranthus palmeri*	2.2	10.2	9	19.7	41.4	14
Golden crownbeard	*Verbesina encelioides*	6.9	29.6	20	17.9	39.5	19
Lambsquarters	*Chenopodium album*	3.5	25.8	4	-	-	-
Narrowleaf goosefoot	*Chenopodium leptophyllum*	2.0	8.4	5	-	-	-
Russian thistle	*Salsola tragus*	2.2	10.2	10	1.1	5.6	7
Tansy aster	*Machaeranthera tanacetifolia*	2.8	11.7	6	-	-	-
Scarlet globe mallow	*Sphaeralcea coccinea*	T	2.0	1	-	-	-
Silverleaf nightshade	*Solanum elaeagnifolium*	2.0	4.0	7	3.3	9.2	9
Spurred anoda	*Anoda cristata*	-	-	-	7.5	22.5	2
Broom Snakeweed	*Gutierrexia sarothrae*	2.0	4.0	2	-	-	-
Unidentified forb		T	5.0	1	-	-	-
Graminoids							
Bristlegrass	*Setaria sp.*	2.3	3.2	6	-	-	-
Sideoats grama	*Bouteloua curtipendula*	3.5	12.5	2	10.0	10.0	1
Red three awn	*Aristida purpurea*	-	-	-	T	5.0	1
Feather fingergrass	*Chloris virgata*	-	-	-	12.5	20.0	2

Appendix B-14
Species Cover and Frequency in October 2010 and October 2013 in Amendment Plots using CCP Protocol

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species		2010			2013		
Common Name	**Scientific Name**	**Mean Basal Cover (%)**	**Mean Canopy Cover (%)**	**Frequency**	**Mean Basal Cover (%)**	**Mean Canopy Cover (%)**	**Frequency**
Vine mesquite	*Panicum obtusum*	T	2.0	1	-	-	-
Shrubs							
Four wing saltbush	*Atriplex canescens*	T	10.0	1	-	-	-
Honey mesquite	*Prosopis glandulosa*	2.7	16.3	4	0.5	6.5	2
North - Lime and Organic Matter with Tilling							
Forbs							
Acacia seedling	*Acacia sp.*	T	4.3	6	T	1.0	2
Carelessweed	*Amaranthus palmeri*	2.0	6.2	9	23.1	48.4	20
Bearded dalea	*Dalea pogonathera*	-	-	-	5.0	35.0	1
Annual goldeneye	*Heliumeris longifolia var. annua*	T	T	1	-	-	-
Crestrib morning glory	*Ipomoea costellata*	T	T	1	-	-	-
Lambsquarters	*Chenopodium album*	4.1	20.8	13	-	-	-
Many flowered blazing star	*Mentzelia multiflora*	7.5	20.0	2	-	-	-
Narrowleaf globemallow	*Sphaeralcea angustifolia*	2.0	7.0	1	-	-	-
Narrowleaf goosefoot	*Chenopodium leptophyllum*	3.0	20.0	4	-	-	-
Russian thistle	*Salsola tragus*	3.5	6.2	10	-	-	-
Scarlet globe mallow	*Sphaeralcea coccinea*	T	2.0	3	-	-	-
Silverleaf nightshade	*Solanum elaeagnifolium*	T	3.8	8	T	2.0	6
Spreading fan petals	*Sida abutifolia*	-	-	-	T	3.0	1
Tansy aster	*Machaeranthera tanacetifolia*	T	3.9	8	-	-	-
Unidentified forb		T	3.0	2	-	-	-
Whiteball acacia	*Acacia angustissima*	T	2.0	1	-	-	-
Graminoids							
Sideoats grama	*Bouteloua curtipendula*	-	-	-	10.0	10.0	1
Vine mesquite	*Panicum obtusum*	12.2	18.1	11	7.5	8.1	8
Dropseed	*Sporobolis sp.*	-	-	-	3.0	3.0	2
Shrubs							
Honey mesquite	*Prosopis glandulosa*	5.0	16.2	8	4.2	19.2	6
Unknown							
Unknown Seedling		-	-	-	T	T	1
West Amendment Plot- Control							
Forbs							
Acacia seedling	*Acacia sp.*	2.0	2.6	9	T	3.5	6
Carelessweed	*Amaranthus palmeri*	T	1.5	2	7.0	20.8	20
Baby aster	*Chaetopappa ericoides*	3.5	5.7	9	-	-	-
Russian thistle	*Salsola tragus*	T	1.8	2	-	-	-
Spreading fan petals	*Sida abutifolia*	-	-	-	0.7	3.9	10
Scarlet globe mallow	*Sphaeralcea coccinea*	T	2.0	4	-	-	-
Silverleaf nightshade	*Solanum elaeagnifolium*	T	2.5	6	1.8	6.3	4
Slender goldenweed	*Machaeranthera gracilis*	2.0	5.0	11	-	-	-
Broom Snakeweed	*Gutierrexia sarothrae*	7.8	15.1	7	T	2.0	1
Blackfoot	*Melampodium leucanthum*	-	-	-	1.8	8.3	4
Bearded dalea	*Dalea pogonathera*	-	-	-	3.6	12.0	13
Wild zinnia	*Zinnia grandiflora*	-	-	-	0.7	2.7	3
	Astragalus sp.	-	-	-	0.6	2.1	8

Appendix B-14
Species Cover and Frequency in October 2010 and October 2013 in Amendment Plots using CCP Protocol

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species		2010			2013		
Common Name	**Scientific Name**	**Mean Basal Cover (%)**	**Mean Canopy Cover (%)**	**Frequency**	**Mean Basal Cover (%)**	**Mean Canopy Cover (%)**	**Frequency**
Twin leaf senna	*Senna bauhinioides*	T	2.0	9	0.1	2.6	10
Unidentified forb		2.0	2.7	8	T	T	4
Graminoids							
Arizona three awn	*Aristida arizonica*	4.1	7.1	8	T	3.0	1
Beardgrass	*Bothriochloa barbinodis*	7.4	11.6	8	3.0	5.0	1
Blue grama	*Bouteloua gracilis*	15.0	16.0	5	12.5	15.0	2
Bristlegrass	*Setaria sp.*	T	2.5	2	-	-	-
Six week three-awn	*Aristida adscensionis*	-	-	-	1.6	4.2	5
Ring muhly	*Muhlenbergia torreyi*	10.7	14.8	12	8.3	15.0	3
Sideoats grama	*Bouteloua curtipendula*	14.6	23.7	13	9.9	15.2	16
Spreading three-awn	*Aristida divaricata*	8.5	11.0	7	-	-	-
Red three awn	*Aristida purpurea*	-	-	-	3.6	6.6	5
Vine mesquite	*Panicum obtusum*	2.0	4.4	5	10.0	17.0	4
Shrubs							
Honey mesquite	*Prosopis glandulosa*	11.7	29.5	5	4.8	28.6	12
Wait-a-minute	*Mimosa biuncifera*	T	3.5	3	11.0	29.0	2

Notes:

T- trace, which is < 0.01%

Appendix B-15
1999 ERA Plot Soil Data

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

ERA#	Copper (mg/kg)	pH	pCu
1	3517	4.47	2.10
2	811	4.80	4.10
3	709	4.97	4.41
4	541	5.03	4.78
7	789	5.47	4.75
9	558	4.33	4.10
10	485	4.53	4.45
13	130	4.80	6.20
Average	**942**	**4.80**	**4.36**

Appendix B-16
Summary Statistics - Unwashed Plant Tissue Copper Concentrations for 2008 and 2013 Amendment Plots and 1999 ERA Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Statistics	2008 Amendment Plots	2008 Amendment Plots[1]	2013 Amendment/Reference Plots		ERA 1999 Plots	
	Amendment Seed + Foliage	**Amendment Seed + Foliage (adjusted)**	**Amendment Seed + Foliage**	**Reference Seed + Foliage**	**Site Seed + Foliage[2]**	**Background Seed + Foliage**
Impacted (Amendment, Reference, and ERA plots that originally had pH <5.5) and Background ERA Plots [3]						
Sample Count	8	8	11	9	8	6
Minimum	16.4	11	7.40	14.20	37.21	5.03
Maximum	302	202	56.40	51.20	208.00	10.02
Median	121	81	21.20	32.80	57.17	7.57
75th Percentile	126	84	35.30	41.38	78.20	9.04
95th Percentile	255	171	55.50	51.20	162.48	9.86
Mean	133	89	25.04	31.44	76.25	7.73
Northeast - Amendment Plot (Lime and Organic Matter Only) and Reference Plot						
Sample Count	1	1	3	3		
Minimum	302.00	202	31.90	31.90		
Maximum	302.00	202	56.40	41.00		
Median	302.00	202	35.90	32.80		
75th Percentile	302.00	202	51.28	38.95		
95th Percentile	302.00	202	56.40	41.00		
Mean	302.00	202	41.40	35.23		
East - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot						
Sample Count	3	3	5	3		
Minimum	84.00	56	7.60	22.80		
Maximum	122.00	82	38.40	42.50		
Median	108.60	73	15.40	32.80		
75th Percentile	121.00	81	25.50	40.08		
95th Percentile	121.80	82	38.40	42.50		
Mean	120.00	80	18.98	32.70		
North Amendment Plot - Lime and Organic Matter with Tilling						
Sample Count	4	4	3	3		
Minimum	16.40	11	7.40	14.20		
Maximum	126.00	84	33.50	51.20		
Median	108.85	73	16.10	14.40		
75th Percentile	141.50	95	29.15	42.00		
95th Percentile	178.70	120	33.50	51.20		
Mean	115.50	77	19.00	26.60		
West Amendment Plot - Control						
Sample Count	5	5	3	3		
Minimum	45.10	30	17.80	16.40		
Maximum	223.00	149	49.40	49.10		
Median	108.00	72	45.00	40.10		
75th Percentile	114.00	76	48.30	46.85		
95th Percentile	201.20	135	49.40	49.10		
Mean	110.62	74	35.20	37.40		
Average of Pooled Data for Amended Plots (Excludes West)	**132.93**		**25.04**	**31.44**		

Notes:

1-Copper is not adjusted to remove dormancy bias in first column but is in second column. This table presents all unwashed data because 1999 and 2008 data have no washed data (multiply all by 0.9282 to convert to washed or see Appendix B-18 for washed data).

2 - Assumes 15% of dry weight is seeds, 85% is foliage (Griffith 2000) for grasses, and 5% of dry weight is seed for mesquite (based on percent biomass collected in 2008 and 2013).

3 - Sites with pH < 5.5 before white rain include Northeast, East, and North Amendment Plots and ERA 1,2,3,4,7,9,10,13. Only ERA sites with pH < 5.5 are in this table.
Values are milligram per kilogram (mg/kg).

ERA = Ecological Risk Assessment (Newfields 2005 has 1999 data for ERA plots)

Appendix B-17
Summary Statistics - Washed Plant Tissue Copper Concentrations for 2008 and 2013 Amendment Plots and 1999 ERA Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company

Statistics	2008 Amendment Plots	2008 Amendment Plots[1]	2013 Amendment/Reference Plots		ERA 1999 Plots	
	Amendment Seed + Foliage	Amendment Seed + Foliage (adjusted)	Amendment Seed + Foliage	Reference Seed + Foliage	Site Seed + Foliage[2]	Background Seed + Foliage
Impacted (Amendment, Reference, and ERA plots that originally had pH <5.5) and Background ERA Plots3						
Sample Count	8.00	8.00	11	9	8	6
Minimum	15.22	10.20	6.91	12.30	34.54	4.67
Maximum	280.32	187.81	51.50	71.40	193.07	9.30
Median	112.31	75.25	18.65	30.10	53.07	7.02
75th Percentile	116.95	78.36	36.60	39.08	72.59	8.39
95th Percentile	236.69	158.58	44.74	59.90	150.81	9.15
Mean	123.45	82.71	23.49	32.62	70.78	7.17
Northeast - Amendment Plot (Lime and Organic Matter Only) and Reference Plot						
Sample Count	1	1	3	3		
Minimum	280.32	187.81	16.20	25.10		
Maximum	280.32	187.81	51.50	45.80		
Median	280.32	187.81	33.30	30.50		
75th Percentile	280.32	187.81	42.40	38.15		
95th Percentile	280.32	187.81	49.68	44.27		
Mean	280.32	187.81	33.67	33.80		
East - Amendment Plot (Lime and Organic Matter with Tilling) and Reference Plot						
Sample Count	3	3	5	3		
Minimum	77.97	52.24	7.02	19.00		
Maximum	113.24	75.87	37.70	71.40		
Median	100.80	67.54	14.30	29.70		
75th Percentile	112.31	75.25	22.40	50.55		
95th Percentile	113.05	75.75	34.64	67.23		
Mean	111.38	74.63	18.26	40.03		
North Amendment Plot - Lime and Organic Matter with Tilling						
Sample Count	4	4	3	3		
Minimum	15.22	10.20	6.91	12.30		
Maximum	116.95	78.36	39.40	39.70		
Median	101.03	67.69	19.80	20.10		
75th Percentile	131.34	88.00	29.60	29.90		
95th Percentile	165.87	111.13	37.44	37.74		
Mean	107.21	71.83	22.04	24.03		
West Amendment Plot - Control						
Sample Count	5	5	3	3		
Minimum	41.86	28.05	8.45	17.60		
Maximum	206.99	138.68	41.10	53.70		
Median	100.25	67.16	17.50	37.20		
75th Percentile	105.81	70.90	29.30	45.45		
95th Percentile	186.75	125.13	38.74	52.05		
Mean	102.68	68.79	22.35	36.17		
Average of Pooled Data for Amended Plots (Excludes West)	**123.38**		**23.49**	**32.62**		

Notes:

1-Copper is unadjusted in first column and adjusted to remove dormancy bias downward by 35 percent in second column. This table presents all data that are washed samples or adjusted to washed samples and is the same table as Appendix B-16 but adjusted to washed, rather than unwashed conditions

2 - Assumes 15% of dry weight is seeds, 85% is foliage (Griffith 2000) for grasses, and 5% of dry weight is seed for mesquite (based on percent biomass collected in 2008 and 2013).

3 - Sites with pH < 5.5 before white rain include Northeast, East, and North Amendment Plots and ERA 1,2,3,4,7,9,10,13. Only ERA sites with pH < 5.5 are in this table.

Values are milligram per kilogram (mg/kg).

ERA = Ecological Risk Assessment (Newfields 2005 has 1999 data for ERA plots)

Appendix B-18
Invasive Plant Species Common to Grant County, New Mexico

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Species	
Common Name	**Scientific Name**
African rue	*Peganum harmala L.*
alfombrilla	*Drymaria arenarioides Humboldt & Bonpland*
Athel tamarisk	*Tamarix aphylla (L.) Karst.*
black henbane	*Hyoscyamus niger L.*
bull thistle	*Cirsium vulgare (Savi) Ten.*
camelthorn	*Alhagi maurorum Medik*
Canada thistle	*Cirsium arvense (L.) Scop.*
common teasel	*Dipsacus fullonum L.*
Dalmatian toadflax	*Linaria dalmatica (L.) P. Mill.*
diffuse knapweed	*Centaurea diffusa Lam.*
Dyer's woad	*Isatis tinctoria L.*
Eurasian water-milfoil	*Myriophyllum spicatum L.*
field bindweed	*Convolvulus arvensis L.*
halogeton	*Halogeton glomeratus (Bieb.) C.A. Mey.*
hoary cress	*Lepidium draba (L.) Desv*
hydrilla	*Hydrilla verticillata (L. f.) Royle*
jointed goatgrass	*Aegilops cylindrica Host*
leafy spurge	*Euphorbia esula L.*
Malta starthistle	*Centaurea melitensis L.*
musk thistle	*Carduus nutans L.*
onionweed	*Asphodelus fistulosus Linnaeus*
perennial pepperweed	*Lepidium latifolium L.*
poison-hemlock	*Conium maculatum L.*
purple loosestrife	*Lythrum salicaria L.*
purple starthistle	*Centaurea calcitrapa L.*
Russian knapweed	*Rhaponticum repens (L.) Hidalgo*
Russian olive	*Elaeagnus angustifolia L.*
saltcedar	*Tamarix ramosissima Ledeb.*
Scotch thistle	*Onopordum acanthium L.*
Siberian elm	*Ulmus pumila L.*
smallflower tamarisk	*Tamarix parviflora DC.*
spotted knapweed	*Centaurea stoebe ssp. micranthos (Gugler) Hayek*
tamarisk	*Tamarix spp. L.*
yellow starthistle	*Centaurea solstitialis L.*
yellow toadflax	*Linaria vulgaris P. Mill.*

Source: Office of the Director/Secretary. 1998. New Mexico noxious weed list. New Mexico Department of Agriculture. Accessed March 17, 2017.

Appendix B-19
Data Used to Develop OAT Scores and Rangeland Condition Ratings of Amendment Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot	Year/ ID	vigor (max = 10)	seedlings (max = 10)	surface litter (max = 5)	pedestals (max = 5)	surface crusting (max = 5)	rills/gullies (max = 5)	OAT score (sum)	Rangeland Condition[1]
1997 OAT Score Rating[2]									
EAST	1997/HE216	2	2	1	3	2	3	13	POOR
WEST	1997/HW111/165	8	8	3	3	3	4	29	GOOD-FAIR
NORTH	1997/HW168	7	7	4	4	4	4	30	FAIR
NORTHEAST	1997/HE192	8	7	5	4	5	4	33	FAIR
2011 (West, North, Northeast) or 2014 (East) OAT Score Rating[3]									
EAST	2014/reference	3	5	2	5	1	3	19	POOR
WEST	2011/reference	9	8	5	5	5	5	37	GOOD-FAIR
NORTH	2011/RS map	--	--	--	--	--	--	≥ 22	GOOD-FAIR
NORTHEAST	2011/RS map	--	--	--	--	--	--	≥ 22	GOOD-FAIR

1 - Rangeland Condition in 1997 was based on OAT score rating and other soil and vegetation condition factors (see Table B-1 in Woodward Clyde 1997 and Data sheets in Appendix D), whereas in 2011 and 2014 it is based only on OAT score, assigned good-fair if above 22, and poor if equal to or below 22.

2 - OAT scores are described in Arcadis (2011a).

3 -East and West plots were surveyed in field with ratings for criteria to develop OAT score. North and Northeast rating was based on remote-sensing based map of predicted OAT scores.

max = maximum possible score of range unit in potential condition for area.

Appendix B-20a
Pre- and Post-Treatment Comparison of Diversity, Richness and Cover

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location	Amendment	Date	Shannon Diversity	Mean Shannon Diversity for Pre- and Post-Amendment Periods	Comparison of Shannon Pre- and Post Periods P value[1]	Richness	Mean Richness for Pre- and Post-Amendment Periods	Comparison of Richness Pre- and Post Periods P value[1]	Evenness	Mean Evenness for Pre- and Post-Amendment Periods	Comparison of Evenness Pre- and Post Periods P value[1]	Cover (%)	Comparison of Cover Pre- and Post Periods P value[1]	Comparison of Cover Pre- and Post Periods P value[1]
East	Amendment	Mar-08	0.47	0.47	0.01	2.5	2.50	0.03	0.34	0.34	0.01	63	63	0.53
East	Amendment	Dec-08	0.89	1.31		3	7.10		0.88	0.73		91.5	70	
East	Amendment	Oct-09	0.84			5.5			0.49			74		
East	Amendment	Apr-10	1.53			6.5			0.85			20.5		
East	Amendment	Oct-10	1.54			11			0.64			74		
East	Amendment	Oct-13	1.77			9.5			0.79			91.5		
East	Reference	Mar-08	0.71	0.71	0.03	3	3.00	0.05	0.65	0.65	0.15	63	63	0.071
East	Reference	Dec-08	1.60	1.46		6	6.80		0.89	0.81		38	48	
East	Reference	Oct-09	0.96			4			0.69			63		
East	Reference	Apr-10	0.95			4			0.80			38		
East	Reference	Oct-10	2.03			11			0.85			38		
East	Reference	Oct-13	1.75			9			0.80			63		
North	Amendment	Mar-08	1.49	1.49	0.97	5.5	5.50	0.15	0.90	0.90	0.01	63	63	0.993
North	Amendment	Dec-08	1.14	1.50		6	7.20		0.72	0.79		74	62	
North	Amendment	Oct-09	1.63			6.5			0.87			50.5		
North	Amendment	Apr-10	1.51			8			0.75			38		
North	Amendment	Oct-10	1.93			10.5			0.82			63		
North	Amendment	Oct-13	1.27			5			0.80			85		
North	Reference	Mar-08	0.49	0.49	0.0018	3	3.00	0.0111	0.45	0.45	0.0025	38	38	0.071
North	Reference	Dec-08	1.65	1.29		10	7.00		0.74	0.68		63	53	
North	Reference	Oct-09	1.17			6			0.66			63		
North	Reference	Apr-10	1.00			5			0.62			38		
North	Reference	Oct-10	1.27			8			0.61			38		
North	Reference	Oct-13	1.38			6			0.77			63		
Northeast	Amendment	Mar-08	1.67	1.67	0.33	8	8.00	0.94	0.81	0.81	0.3398	74	74	--
Northeast	Amendment	Dec-08	1.43	1.55		5.5	7.90		0.85	0.78		63	63	
Northeast	Amendment	Oct-09	1.23			5.5			0.75			63		
Northeast	Amendment	Apr-10	1.55			7			0.82			63		
Northeast	Amendment	Oct-10	1.76			10.5			0.76			63		
Northeast	Amendment	Oct-13	1.80			11			0.75			63		
Northeast	Reference	Mar-08	1.61	1.61	0.49	6	6.00	0.02	0.90	0.90	0.0007	85	85	0.071
Northeast	Reference	Dec-08	1.64	1.64		7	8.00		0.84	0.79		85	72	
Northeast	Reference	Oct-09	1.54			7			0.79			85		
Northeast	Reference	Apr-10	1.62			8			0.78			63		
Northeast	Reference	Oct-10	1.77			10			0.77			63		
Northeast	Reference	Oct-13	1.62			8			0.78			63		
West	Amendment	Mar-08	1.60	1.60	0.003	8.5	8.50	0.0099	0.75	0.75	0.36	85	85	0.016
West	Amendment	Dec-08	1.84	1.86		11	12.50		0.77	0.74		85	76	
West	Amendment	Oct-09	1.73			10.5			0.74			74		
West	Amendment	Apr-10	1.84			12			0.74			74		
West	Amendment	Oct-10	1.97			14			0.74			74		
West	Amendment	Oct-13	1.91			15			0.71			74		
West	Reference	Mar-08	1.17	1.17	0.61	6	6.00	0.01	0.66	0.66	0.27	63	63	0.071
West	Reference	Dec-08	1.83	1.68		10	10.80		0.79	0.73		85	76	
West	Reference	Oct-09	1.31			9			0.59			85		
West	Reference	Apr-10	1.95			11			0.89			85		
West	Reference	Oct-10	1.53			10			0.66			63		
West	Reference	Oct-13	1.78			14			0.70			63		

Appendix B-20b
Pre- and Post-Treatment Comparison of Percent n Grass, Non-woody, and Annual Species

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Location	Amendment	Date	% Vegetation in Grass Cover	Mean Grass Value for Pre- and Post-Amendment Periods	Comparison of Grass Pre- and Post Periods P value[1]	% Vegetation in Non-woody cover	Mean Nonwoody Value for Pre- and Post-Amendment Periods	Comparison of Non-woody Pre- and Post Periods P value[1]	% Vegetation in Annual Species	Mean Annuals for Pre- and Post-Amendment Periods	Comparison of Annuals Pre- and Post Periods P value[1]
East	Amendment	Mar-08	0%	0.00	**0.002**	18%	0.18	**0.0004**	0%	0.00	**0.0050**
East	Amendment	Dec-08	0%	0.13		98%	0.89		92%	0.60	
East	Amendment	Oct-09	2%			90%			71%		
East	Amendment	Apr-10	18%			60%			11%		
East	Amendment	Oct-10	6%			97%			75%		
East	Amendment	Oct-13	39%			97%			50%		
East	Reference	Mar-08	0%	0.00	0.37	26%	0.26	**0.015**	0%	0.00	**0.016**
East	Reference	Dec-08	0%	0.01		65%	0.59		5%	0.10	
East	Reference	Oct-09	0%			41%			0%		
East	Reference	Apr-10	1%			39%			1%		
East	Reference	Oct-10	5%			69%			26%		
East	Reference	Oct-13	0%			80%			16%		
North	Amendment	Mar-08	29%	0.29	**0.02**	49%	0.49	**0.01**	0%	0.00	**0.0165**
North	Amendment	Dec-08	0%	0.10		73%	0.67		47%	0.25	
North	Amendment	Oct-09	13%			60%			2%		
North	Amendment	Apr-10	19%			56%			9%		
North	Amendment	Oct-10	7%			72%			20%		
North	Amendment	Oct-13	9%			74%			47%		
North	Reference	Mar-08	7%	0.07	0.46	7%	0.07	*0.06*	0%	0.00	**0.04**
North	Reference	Dec-08	42%	0.16		58%	0.26		9%	0.08	
North	Reference	Oct-09	15%			20%			0%		
North	Reference	Apr-10	0%			9%			1%		
North	Reference	Oct-10	10%			16%			15%		
North	Reference	Oct-13	13%			30%			13%		
Northeast	Amendment	Mar-08	41%	0.41	**0.00**	55%	0.55	**0.68**	0%	0.00	0.18
Northeast	Amendment	Dec-08	6%	0.03		62%	0.53		0%	0.10	
Northeast	Amendment	Oct-09	4%			38%			0%		
Northeast	Amendment	Apr-10	0%			49%			0%		
Northeast	Amendment	Oct-10	4%			57%			30%		
Northeast	Amendment	Oct-13	2%			59%			20%		
Northeast	Reference	Mar-08	18%	0.18	*0.08*	37%	0.37	*0.29*	0%	0.00	0.99
Northeast	Reference	Dec-08	35%	0.28		78%	0.71		0%	0.01	
Northeast	Reference	Oct-09	42%			80%			0%		
Northeast	Reference	Apr-10	20%			65%			0%		
Northeast	Reference	Oct-10	21%			65%			5%		
Northeast	Reference	Oct-13	22%			66%			0%		
West	Amendment	Mar-08	37%	0.37	**0.01**	78%	0.78	**0.17**	0%	0.00	0.37
West	Amendment	Dec-08	41%	0.40		85%	0.80		0%	0.07	
West	Amendment	Oct-09	42%			78%			0%		
West	Amendment	Apr-10	38%			77%			0%		
West	Amendment	Oct-10	41%			83%			6%		
West	Amendment	Oct-13	39%			79%			27%		
West	Reference	Mar-08	80%	0.80	**0.05**	99%	0.99	*0.06*	0%	0.00	0.22
West	Reference	Dec-08	64%	0.59		97%	0.93		0%	0.09	
West	Reference	Oct-09	74%			97%			0%		
West	Reference	Apr-10	35%			80%			5%		
West	Reference	Oct-10	75%			96%			6%		
West	Reference	Oct-13	49%			97%			34%		

1 - A one-sample t-test on arcsin square-root transformed proportions or non-parametric equivalent test (if t test assumptions not met, Wilcoxon one-sample test used) between 2008 value and average of five periods of sampling were compared using data in Appendix B-20b. P values are included to evaluate if variability is too high (if P ≥ 0.10), making comparison of pre- to post-effect periods in Table 16b uncertain.

Red are from Wilcoxon one-sample tests

Appendix B-21: Weight of Evidence on Separate Effects of Three Technologies

The amendment study was not designed to evaluate each treatment's effectiveness on improving wildlife habitat and rangeland separately, yet the Feasibility Study (FS) will need such information for remedial decisions. This section attempts to evaluate each treatment separately by gathering evidence from five sources: (1) this study, (2) the site-wide ERA (Newfields 2005), (3) the white rain report (Arcadis 2017a), (4) the phytotoxicity and community report (Arcadis 2017b), (5) photographs and anecdotal observations of the results of haul road tilling and (6) from the literature. The effect of lime alone is best evaluated by assessing white rain effects. The effect of tilling alone is best evaluated by assessing haul road tilling effects, where a haul road in a poor rangeland area was "ripped" just as the East plot was ripped (ripping and tilling are both referred to as tilling in this report). The effect of organic matter amendments is best assessed by comparing effects of organic/lime amendment applications to untreated plots, to the Northeast amendment plot where the lime had no effect on pH or pCu, and to areas treated without organic matter, such as the haul road. The latter requires subjectively separating lime from likely organic amendment effects, which is tenuous at best but strengthened by reviewing the literature on effects of organic matter on reclaimed lands. Effects on soil chemistry, copper uptake, and plant community parameters of vegetative cover, richness, percent of vegetation in grass cover, and successional stage were compared for each individual technology. This approach weights the evidence to make final conclusions on effectiveness of the technologies. This appendix is included to reduce likelihood of making conclusions based on the uncertain amendment study that may not be warranted when other information sources are evaluated.

Lime Effect based on White Rain

The white rain was a "natural" event and its effect on soil chemistry was documented across the Smelter Tailing Soils Investigation Unit (STSIU) in the *Year 5 Report on pH Monitoring to Evaluate the Effect of White Rain on STSIU* (referred to as the white rain report, Arcadis 2017a). Based upon the work done to analyze the effects of the white rain, there is a robust set of information to support an independent analysis of lime as a remedial technology because the constituents detected in the white rain were essentially the same constituents in lime (i.e., calcium oxide and hydroxide). The white rain analyses supported that lime in the rain significantly increased pH and pCu.

The white rain effect on vegetation in the amendment study plots is discussed in the main text of this report. The change in pCu from the white rain appeared to substantially reduce copper uptake in aboveground tissue (**Figure 6** of main report[1]). As discussed in the main text, this reduction in uptake likely affected community composition by increasing plant species richness and the proportion of cover that is herbaceous, as shown by the higher richness and proportion in non-woody cover in all the reference plots in this study (**Figure 9b, Table 16a and 16b**). The white rain did not improve total vegetative cover, and cover decreased on one plot (Northeast), though its proportion in grass species increased some.

Other reports provide additional supporting information on the effect of the increased pCu from the white rain on vegetation community characteristics. The phytotoxicity and community study (Arcadis 2017b, referred to as the community study) identified positive relationships between pCu with cover and richness,

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[1] Figures and Tables refer to those in main report unless indicated otherwise.

which can be tested as to whether they hold true with amendment study data. It also provides lists of species found on subplots of some ERA locations and amendment plot locations in 2014 after the white rain (**Appendix F, Table F-3**) that can be compared to such information recorded before the white rain in this study and in the site-wide ERA 1999 study. No remedies were applied to the study areas in the community study or to the plots evaluated, enabling an assessment of just the white rain effect.

The community study found species richness was higher on soils with higher pCu, but only when the soil category was taken into consideration. The four soil categories were (1) rocky, eroded soils on relatively flat areas represented by the East area in this study (called flat rocky), steeper slope soils (>13 percent) represented by the Northeast area (called slope), granular soils on relatively flat ground represented by the North and West areas (called flat granular), and bedrock soils in areas with over 60 percent bedrock at surface (called bedrock, **Figure A-2-2**). The bedrock type is not represented by any plot in this amendment study but the other three types are.

Bedrock locations had the lowest richness at the same pCu, followed by rocky soils. The flat, granular soils had the highest richness for a given pCu and slope soils the second highest. The community study found total cover was significantly related to pCu only in the flat granular and bedrock types.

The community study results were mostly consistent with the white rain results. The community study result showed richness increases with increasing pCu, consistent with the higher pCu from the white rain increasing richness on the reference plots. Unlike richness, percent total vegetation cover did not increase with certainty on the reference plots after the white rain (**see reference plots in Table 16a, Figure 9a, Figure 10 and photolog in Appendix C**). The community study also found no relationship between pCu and cover in slope or flat rocky soils, but it did for flat granular soils. The North reference plot had flat granular soil, and its cover increased with increased pCu by 25 percent by 2013 (**Table 16a**), which would be consistent with the community study; however, that increase is highly uncertain because of high variability in cover in that plot over time (**Figure 9a**). The West plots also had flat granular soils, yet vegetative cover did not increase after the white rain, probably because the West plots already had high pCu before the white rain.

Soil pCu might have a more important effect on non-woody cover than total cover, particularly forbs; however, the increase in proportion in grass species after the white rain was small to nonexistent (**Table 16b**). On the relatively barren mesquite-dominated East reference plot (flat rocky type), a grass species did appear briefly in the single monitored 11-foot radius subplot (subplot is 4 percent of the plot), specifically, sand dropseed (*Sporobolus cryptandrus*). It appeared in 2010, but was not there in 2013. It and beardgrass were present again in small amounts on the plot in 2014 when more (25 percent) of the plot was surveyed as part of the community study (Arcadis 2017b).

ERA plot plant community observations and soil pCu before (Newfields 2005) and after the white rain (Arcadis 2017b) are shown in the Table B-21-1 below in addition to poor rangeland reference plot observations (pre-white rain amendment and ERA plots are comparable because same sized plot, though longer shape of ERA plots may results in more species[2]). These table comparisons are for flat rocky soils, which are in poor rangeland condition. Vegetation abundance changes with weather, but fortunately data

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[2] See Arcadis (2017b) discussion of likelihood of observing more species in ERA plot shape.

compared in the **Table B-21-1** were collected during the fall season in years with similar rainfall (**Figure F-5** in Arcadis 2017b).

Table B-21-1. Observations before and after the white rain.

	ERA 2		ERA 3		East Reference	
	Before (1999)	**After (2014)**	**Before (1999)**	**After (2014)**	**Before (Mar 2008)**	**After (2014)**
Soil pCu[1]	4.1	5.7	4.4	5.6	4.2	5.3
Richness	1	9	6	11	3	12
No. grass species and code[2]	0	2 (ARPU, SPCR)	2 (SEMA, SPCO)	2 (SESP, BOBA)	0	3 (BOBA. SPSP, BOBA2)
No. forb species	0	5	2	7	1	6
No. shrub species and code	1 (PRGL)	1 (PRGL)	2 (PRGL, GUSA)	2 (PRGL, COSP)	2 (PRGL, GUSA)	3 (PRGL, GUSA, MIBI)
No. succulent species	0	1	0	0	0	0

Notes:

1 – Calculated pCu; In Arcadis (2017b), where STS-PT-2013-1 is ERA 2, STS-PT-2013-2 is ERA 3, STS-PT-2013-17 is East Reference Plot of Amendment Study.

2 – Species name associated with species code is in **Appendix B-9**.

The table shows number of all species increased by up to 9 species and forbs increased by 5 species when pCu increased after the white rain. When pCu was improved on rocky soils with pCu less than 4.3 to over 5.0 (ERA 2 and East reference plots), up to 3 grass species per plot returned (various combinations of red threeawn [*Aristida purpurea*], beardgrass [B*othriochloa barbinodis*], bristlegrass [*Setaria* sp.], dropseed, and sixweeks grama [*Bouteloua barbata*]). At slightly higher pCu before the white rain in ERA 3, two grass species were already present (bristlegrass and dropseed); two grass species were still present (bristlegrass and beardgrass) after the white rain in that plot. Grass species most responsive to the white rain on these soils are beardgrass (BOBA), red threeawn (ARPU), and sixweeks grama (BOGR). Forb species responsive include silverleaf nightshade (*Solanum elaeagnifolium*), globemallow (*Spheralcea* sp.), cottonbatting plant (*Pseudognaphalium stramineum*), and babyslippers (*Hybanthus verticellatus*) (Arcadis 2017b). Hog potato (*Hoffmannseggia glauca*) and Abert's wild buckwheat (*Eriogonum abertianum*) may be more tolerant of low pCu as they were present on the ERA plots before the white rain (Newfields 2005). Hog potato showed up after the white rain on the East reference plot (**Table 15**). Despite more species, large changes in cover in this rocky habitat did not occur as seen in photographs below of conditions before and after the white rain. However, the proportion of the limited cover present in non-woody plants increased in the low pCu plots (**Table 16b**) Photographs of ERA 2 and ERA 3 plots prior to white rain are below:

Photo 1. ERA-2 in Spring 2000 (from Arcadis 2001)

Photo 2. ERA-3 in Spring 2000

Photo 3. ERA 3 in Fall 1999

Fall photographs of ERA 2, ERA 3, and East reference plots after the white rain are below.

Photo 4. ERA 2 in Fall 2014

Photo 5. ERA 2 in Fall 2014

Photo 6. ERA 3 in Fall 2014

Photo 7. ERA 3 in Fall 2014

Photo 8. ERA 2 in Fall 2013 (grassy tilled haul road in background is not part of plot)

Photo 9. ERA 3 in Fall 2013

Photo 10. East reference plot in Fall 2016

For fair rangeland soils that are flat, granular (North reference plot) or slope soils (Northeast reference plot), species composition shifted some in the Northeast reference plot (more vine mesquite) but not in the North reference plot after the white rain (**Table 15**). The status of the successional stage did not seem to be strongly affected by the white rain in either of these plots because no shifts from mostly early to late successional species were observed (stages are described in **Section 5** of **Appendix B-3**).

In conclusion liming alone, as seen by the white rain, can increase soil pH and pCu; decrease copper uptake into plants; and increase species richness and the proportion of existing cover in non-woody plants (also see main text). The increase in soil pH and pCu is smaller on the steep plot because of runoff. On all the plots, effects on cover, grass proportions, and successional stage appear to be at most minimal. The effect of the white rain as a lime treatment alone based on the weight of evidence is summarized in **Table 20**. Lime is not recommended as a stand-alone treatment because it did not increase vegetative cover, which is required to improve habitat for wildlife and livestock.

Tilling Effect Based on Ripped Haul Road

As discussed in the main text, tilling or plant disturbances must be added or replace the lime amendment to change grass and perennial herbaceous plant cover as well as successional stage. The plant community change from tilling with amendments (lime and organic matter) observed on the amendment plots was in a positive direction on the flat rocky poor rangeland type and in a negative direction on the fair rangeland slope and flat granular types. To separate which of these changes are solely due to tilling, the ripped (tilled to 12 to 18 inches in 2003) haul road results were evaluated. No amendments were added to the road, and the white rain occurred five years later enabling an independent analysis of the effects of tilling without confounding variables due to chemistry. This discussion of tilling effects is restricted to the soil categories of the North and East plots because steep, boulder-ridden slopes such as the Northeast plot are impractical to till.

Tilling without amendments reduces soil compaction and creates a more penetrable granular growth medium, which is of most benefit in soils that are compacted or have lost surface soil, such as the East plots of the flat rocky type. Tilling also mixes the soil and its constituents more evenly to deeper strata. The North and West plots are in better rangeland condition, already have granular soils and greater amounts of established vegetation; therefore, tilling would do more harm destroying established vegetation than good in these plots. The tilling effect is discussed first for the flat rocky soil category using the haul road as an example because the haul road represented the flat rocky type in poor rangeland condition since it was adjacent and built on that type. The possible effect of tilling alone for the flat granular category is then discussed but no local example of tilling alone is available in fair rangeland areas.

<u>Flat Rocky Soil Category</u>. Before tilling, the haul road was adjacent to and composed of a rocky, compacted soil in a relatively level area that had been overgrazed with loss of surface soil. The tilling, accomplished with a ripper similar to the one used for the East plot, created furrows of granular, mixed soil in which new species grew. At first Russian thistle grew in the furrows; three years after the tilling, the thistle was replaced by grasses, based on anecdotal information (Pam Pinson, personal communication). The pCu of this area before tilling is estimated to be in the general range of the ERA 2 plot in 1999 of 4.1 because it is immediately adjacent to the ERA 2 plot, a plot with the same type of rocky substrate (**Photo 9**). The road before tilling is assumed to have had very little vegetation because it was a haul road, but adjacent areas approximated the plant community at the ERA 2 location in 1999 (shown in **Table B-21-1** above as only having one species, honey mesquite). The grass species of the post tilling and post-white rain community on the road were observed in the field and photographed in 2014 for comparison, showing more abundant grasses of at least six species than observed in the adjacent area in 1999 (**2014 Photos 11 to 13** of haul road below). Because the white rain occurred between 1999 and 2014, it is also useful to compare the species composition of the tilled road in 2014 to the recorded species composition of the similar East reference plot in 2014 (from the Arcadis 2017b community study), as the former has been tilled and exposed to the white rain and the second has not been tilled but was exposed to the white rain. The untilled ERA 2 community in 2014 can also be compared to the tilled road as shown in the **Table B-21-2** below. The differences may be attributable to the tilling.

Table B-21-2. Observations before and after the white rain compared to after tilling and white rain[1].

	ERA 2 Before White Rain (1999)	ERA 2 after White Rain (2014)	Adjacent Haul Road After Tilling and White Rain (2014)
Soil pCu	4.1	5.7	> 5.7[2]
Richness	1	9	≥ 8
No. grass species and code[1]	0	2 (ARPU, SPCR)	≥ 6 (SESP, ARSP, SPSP, BOCU, BOBA, BOGR)
No. forb species	0	5	≥ 1
No. shrub species and code	1 (PRGL)	1 (PRGL)	≥ 1
No. succulent species	0	1	0

Notes:

1 – Name of species code is in **Appendix B-9**, except ARSP is *Aristida* sp.

2 – Probably higher than pCu of adjacent ERA 2 area because tilling may have mixed in copper at surface with lower subsurface and increased pCu to even higher levels than the white rain.

The number of species growing in the tilled haul road is uncertain because small species can be missed in the photographs, but at least 8 were identified based on fall 2014 photographs (**Photos 10 to 12** below) and probably more. That change could be ascribed to the white rain, which also increased species (by 8) in the adjacent ERA 2 plot. The dramatic change from tilling alone, however, was the percent cover in grasses and number of perennial grass species. The tilled haul road after the white rain had a high abundance and cover of bristlegrass, red threeawn or Arizona three-awn (*Aristida arizonica*), sand dropseed, sideoats grama (*Bouteloua curtipendula*), a small amount of beardgrass, and blue grama (*Bouteloua gracilis*) or other gramas in the furrows. Not as much grass cover was in between the furrows, where the soil was not tilled. Grasses dominated, outcompeting forbs though some forbs and shrubs were present (see photos below). The similar ERA 2 plot had much lower cover of grass species the same season and year, composed of red threeawn and sand dropseed (**Table B-21-2**, **Photos 4 and 5**). The number of grass species was at least 4 greater in the tilled road, than the untilled adjacent ERA 2 plot (**Table B-21-2**). In comparison, the similar but untilled East reference plot in fall had a low amount and number of grass species (**Photo 10 and photolog in Appendix C**) that were mostly beardgrass with some sand dropseed and sixweeks grama. The untilled ERA 3 plot in 2014 also had few grass species (only 2) and grass cover was sparse: beardgrass and bristlegrass (**Table B-21-1**, **Photos 6 and 7**). The late successional sideoats and blue grama species were only present in the tilled haul road (the grama species successional status are discussed in Bestelmeyer et al. 2004).

These observations, though more qualitative (percent cover by species was not recorded), indicate tilling can increase grass cover and accelerate succession toward late successional species such as blue grama and sideoats grama after 11 years when compared to nearby areas without tilling. These results apply to tilling to 12 to 18 inches, which is deeper than tilling that occurred for this Amendment Study (8 inches), but tend to match results observed in the East amendment plot of increased total cover and grass cover, except for more late successional grass species and fewer annual weeds were thriving on the tilled haul road (compare **Photos 11 to 13** with **Photo 14**). The East amendment plot in 2014 represents a location with rocky, eroded surface soil in poor rangeland condition that was tilled but more completely and at shallower depth and limed twice (white rain, amendments) to a pCu of 6.2, plus it had organic amendments added. Unlike the tilled haul road, it was dominated by forbs in 2013 and 2014 (and 2016) but nonetheless also had abundant grasses, where the grass species were dominated by bristlegrass and localized patches of feather fingergrass, with some sideoats grama and red threeawn. It had 6 forbs and 3 shrub species, with forbs dominating (**Table 15, Appendix B-14, photolog in Appendix C**). This difference in forb versus grass dominance may be because more years have passed since tilling the haul road (11 years) than on the East plot (6 years), or due to addition of amendments on the East amendment plot producing different results. The tilling plus amendments applied to the East amendment plot converted it from “poor” to “good” rangeland condition (see main text) but also encouraged weedy annuals to invade. Tilling on the East plot could have also reduced copper concentrations by mixing the surface with low concentration subsurface soils during the decompaction and not have needed the white rain or organic amendments. But the decompaction alone could produce the results observed if the plants are resistant to low pCu. Most likely the large increase in cover in both the haul road and East plot is a from a combination of decompaction and mixing with depth. Decompaction may have been the main driver because pCu was high (5.7) in the adjacent area of the haul road (**Table B-21-2**), yet did not show the same cover and grass improvement.

Photos 11 to 13: Haul Road after “tilling” in 2014.

Photo 11. Fall 2014

Photo 12. Fall 2014

Photo 13. Fall 2014

Photo 14. East amendment plot in fall 2014 after tilling with lime and organic matter amendments

Overall, the comparisons suggest the tilling in the eroded rocky soil type characterized as in poor rangeland condition increases grass cover to a much greater extent than the white rain or lime amendments. The grass species present after tilling alone in the haul road include more late successional species over time than if the area were not tilled and only subjected to the white rain. In contrast, the East amendment plot tilling combined with amendments resulted in mainly the early successional species of bristlegrass, threeawn, and dropseed (and often beardgrass) establishing early after disturbance. They are often early colonizers based on the literature (Roemer and Schultes 2010, Hu et al. 2013; FEIS database, https://www.fs.fed.us/database/feis/plants/graminoid). The CCA in **Figures 13a and 13b** further supports that bristlegrass, threeawn, and feather fingergrass are early colonizers after tilling, but the threeawn can also be a late successional species and may also be influenced by lime amendments increasing pCu and pH. (see main text and **Figures 13a and 13b**). The tilled haul road results indicate, however, that apparently two of these grass species (bristlegrass and threeawn) can increase after tilling despite no additional lime treatment beyond the white rain. The white rain, however, increased pH substantially in the haul road, probably the same increase as seen in the adjacent ERA 2 plot area (increase of 1.6 standard units).

The tilling might have changed the pH or pCu of the tilled haul road soils by mixing and dispersing copper and hydrogen ions, but these soils have not been sampled to verify if the soil chemistry changed. Large differences in soil chemistry of the surface six inches are unlikely with tilling only to eight inches, as seen by no significant large and detectable changes in copper resulting from tilling the amendment plots (**Table 9a**), but the haul road was tilled to 12 to 18 inches and may have had more of a mixing effect. Because there is no clear benefit of all three remedial technologies in increasing pCu and decreasing uptake of copper in plants in the East amendment plot after the white rain, this suggests that chemical changes from mixing are not driving the large community changes, but rather the tilling to convert poor rangeland to fair to good rangeland is responsible. The evidence from the road tilling also supports that copper uptake in plant tissues probably is less of an impediment to a healthy grass and rangeland community than soil loss and compaction, which in many areas stems from past overgrazing.

Overgrazing was widespread in the area, however, we cannot assess how much of the soil loss and compaction observed today was either a result of past pCu depression or overgrazing. More than 55 percent of the pCu value less than 6 area is Muzzler Rock Outcrop/Santana. The Soil Conservation Survey (SCS) classifies these soil types as “very poor” for grasses, indicating that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. The Grant County SCS indicates that steepness of slope, depth to bedrock, areas of rock outcrop, and small stones are major limitations and overgrazing leaves the soils in this unit subject to soil blowing and gulling, resulting in an increased number of undesirable plants. Other soil types in the pCu valueless than 6 area include Abrazo Luzena, Dagflat, Lonti, Manzano and Pay-Ell-Man. Historic grazing practices occurred over the past 100 years, before the first smelter stack was built in 1910. Prior to the turn of the century, there were no fences and there were uncontrolled numbers of livestock grazing. In the early 20th century, land went into private ownership and fences were built. Modern day grazing practices are significantly improved; however, early grazing had an effect and impacted the soil.

Flat Granular Soil. Little information is available on the effect of tilling alone on STSIU vegetation communities on the flat granular soil type because no area has been tilled on this type without adding amendments of lime and organic matter. However, all three treatments combined reversed positive trends of the white rain and caused a reduction in plant species diversity (evenness) and percent in grass cover after 5 years (**Tables 16a and 16b**). This reduction is not unexpected because a granular soil located in an area with fair rangeland condition does not need decompacting and would already have good grass growth, as long as low pCu was not too limiting. The North amendment plot had acidic soil with low pCu (estimated to be about 2.0 based on current copper concentrations, **Table 1**) during the growing season before the white rain. Yet, it had grass species and plant diversity that were lost after the treatments were applied. The evidence supports that copper uptake in plant tissues is less of an impediment to a healthy grass and rangeland community for fair rangeland than disturbance that can set succession back to an earlier stage. In contrast, the results from the rocky soil type indicate decompaction through tilling is a primary driver for increasing vegetative cover, particularly grass cover. The white rain effect of increased diversity and proportion in herbaceous cover (though not more grass or total cover) shows the fair rangeland community can improve somewhat with liming, but tilling and possibly organic matter additions remove that benefit. Based on a review of successional processes (**Section 5** in **Appendix B-3**), it may be decades before this soil type can recover from the tilling and organic matter application.

For example, late successional species such as sideoats grama as well as Arizona three-awn were already growing on the North amendment and reference plots in highly acidic soil (pH = 3.69, Table 1) before the white rain and treatment (as well as beardgrass and vine mesquite). Tilling clearly eliminated these and set back the community to an earlier annual weedy successional stage, which has not yet recovered. Weedy annuals dominated the North amendment plot even eight years later in 2016 (see photolog in **Appendix C** with abundant carelessweed). Some sideoats grama and sand dropseed were present in 2013 (**Appendix B-14**) indicating some movement toward a later successional stage, but the process is slow because mainly vine mesquite (a grass) was present in 2016 (see photolog in **Appendix C**). The lime and organic matter may have contributed to the setback in grasses, as seen by the reduction in grass cover percentage in the Northeast amendment plot that was not tilled, but the Northeast amendment plot did increase in cover whereas the North amendment plot did not after 5 years. That difference in total cover may be a result of tilling, not from the organic matter.

The results support that plots in fair rangeland condition with grasses may not benefit from tilling, which is often observed in the literature when semi-desert areas are disturbed (Romme et al. 2003, Bestelmeyer et al. 2004), especially since perennial grasses take a long time to recover (see **Section 5** on vegetation succession in **Appendix B-3**). In contrast, poor rangeland will benefit from decompaction of the soil improving total cover, grass cover, richness and advancing succession toward a more perennial plant community of good rangeland quality. **Table 20** summarizes this conceptual model of the effect of tilling on community parameters on rocky and flat granular soil types based on the weight of evidence discussed in this section.

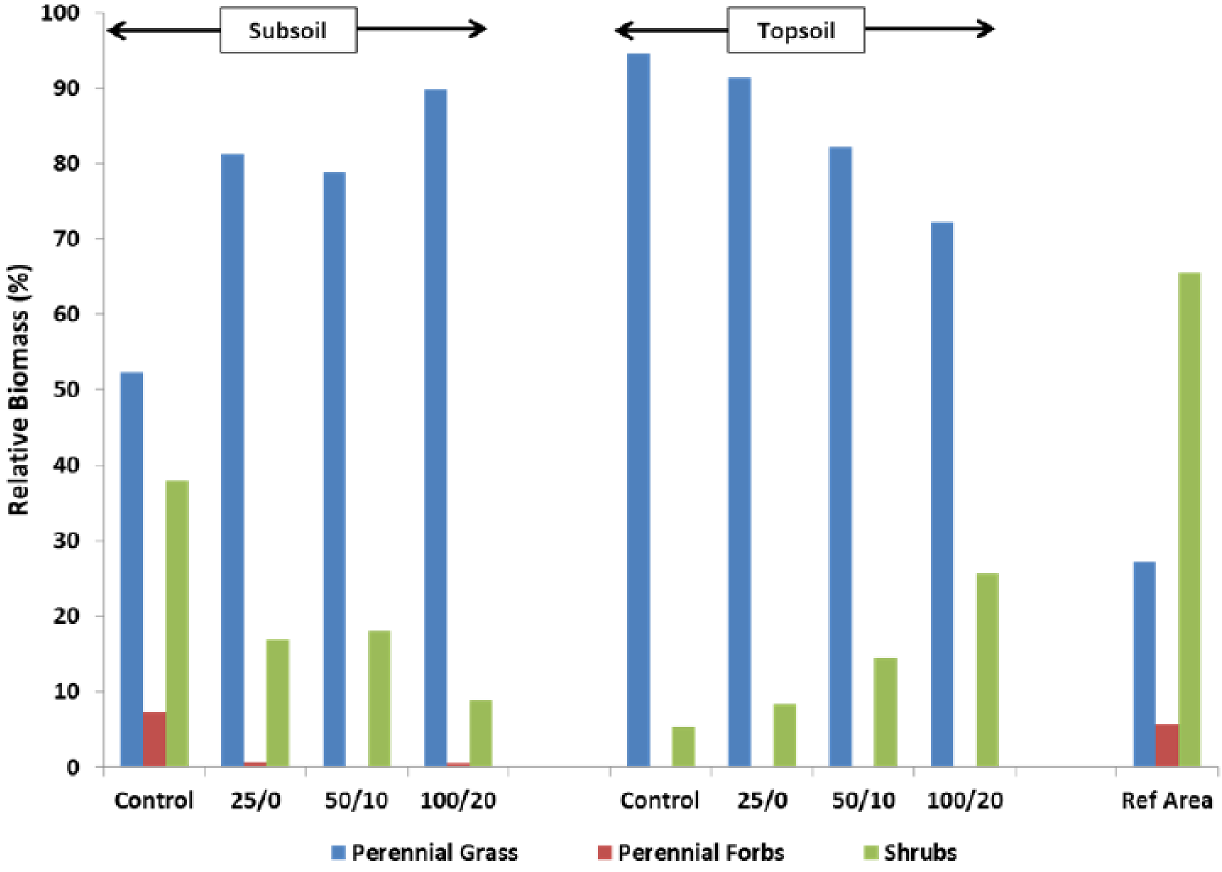
Effect of Organic Matter

The organic matter did not appear to contribute to a change in pH or pCu based on finding that (1) neither the lime nor organic matter increased pH or pCu when both were applied together on the Northeast plot and (2) even the other two plots did not show a significant increase in pCu relative to the untreated reference plots after these amendments were applied. Lime applied on acid soils is known to increase pH and it did improve pH when tilled into the soil, but was not effective at significantly changing the pCu, even when combined with organic matter. With greater sampling, a significant change may have been detected but the change most likely is attributable to the lime increasing the pH. Organic matter was not applied on the tilled haul road and yet the grasses greatly increased in cover and diversity, indicating organic matter may not be particularly important for altering soil chemistry and improving plant communities.

Organic matter possibly could improve structure of the soil and release of nutrients to plants and its addition may further enhance the community beyond tilling effects. However, the effect of organic matter on the plant communities is difficult to estimate from this study because it was not applied separately. The literature includes studies that applied it separate from other amendments and can provide insight into its effectiveness. Reclamation staff (Dr. Lewis Munk) at Chino reviewed many studies of reclamation in semi-arid to arid areas in New Mexico, Arizona, Utah, and Colorado and found the studies generally reported little to no benefit of adding organic matter to topsoil or cover material when reclaiming areas. Paschke et al. (2005) found no improvement in perennial species relative to controls after 25 years when biosolids (treated sewage) were applied to topsoil at a shale retort mine in Colorado, and plant diversity decreased (**Figure B-21-1**). Bay et al. (2010), in a limestone quarry study of manure amendments in New Mexico, found that after 5 years, annual weeds dominated (Russian thistle and kochia) and richness and vegetation cover did not improve over controls (**Figure B-21-2**). Walton et al. (2001) found no effect of biosolid amendments on vegetation of degraded rangeland after 18 years in a study on the Jornada Experimental Range in southern New Mexico. Milczarek et al. (2011) conducted a 13-year study on Morenci mine in Arizona and found that high rates of biosolids application on acidic tailings covered with a foot of cover material or more (biosolids applied at 3 rates similar to this study) increased salinity and weedy annuals and decreased diversity, though overall vegetation cover increased as the amount of organic matter added increased (Photos 15 to 17). Some sites have weed dominance even 10 years after application (cheatgrass invasion, Borden and Black 2011; biosolid treatment in Utah) and some do not (good grass growth, Ippolito et al. 2010; 14-year Colorado study), though the latter was on non-degraded rangeland, applied for biosolid disposal, not reclamation. These studies do not address changes in pCu from organic matter additions but the current amendment study does not strongly support that pCu changes after applying lime or organic matter amendments (**Table 9a and 9b**), and as such results from these studies may be applicable to the likely effect of organic matter additions at the STSIU.

The conclusion from the review of these various studies of little benefit from organic matter amendments seems consistent with results discussed in this appendix. The tilled haul road had an increase in total cover, grass cover and grass species richness without organic matter or lime (other than white rain) added, which supports that reducing compaction at the surface of poor rangeland soils (after liming by the white rain) assisted plant and grass growth, not the addition of organic matter. The more steeply sloped Northeast amendment plot had the highest amount of organic matter applied along with lime, but neither the organic matter nor lime significantly changed pH, pCu nor uptake of copper into the plants. Vegetation cover of the Northeast reference plot decreased after being limed by the white rain (**Table 16a**), but recovered some after amendments were applied (**Table 16b**), possibly because of organic matter additions, as seen at the Morenci mine. This seems unlikely however, because Morenci mine's cover (Gila Conglomerate borrow material) was likely very low in total organic carbon (TOC), resulting in a dramatic response, whereas the amendment plot areas were not that low in TOC for a semi-arid soil. TOC of the Northeast reference plot was generally over 1percent (**Table 3**) and was not even significantly different from the amended plot indicating organic matter was unlikely to be responsible for the cover increase (**Figure 4b**, **Table 11**). Changes in the plant community (increase in cover of annual species, decreased grasses) of the Northeast amendment plot were more likely due to time since disturbance during amendment application as indicated by the CCA (**Table 13b**) showing that the greatest separation of Northeast plot community composition between treated and untreated plots is based on this disturbance variable (**Figure 13b**), not TOC or carbon to nitrogen ratio (C:N). However, soluble copper concentrations also separate the plot community changes over time. Soluble copper decreased as the plot community recovered from the treatment disturbance, which adds more uncertainty into the key drivers of changes on this plot, and whether organic matter caused the increase in soluble copper. If the manure increased soluble copper, the effect was negative (supported by loss of grass cover), opposite of the objective of the remedial technology.

Figure B-21-1. Relative biomass of plant life forms when treated with biosolids/wood waste (shown in tons/acre), showing no improvement relative to controls in perennial species when applied to topsoil (Paschke et al. 2005).



Weed seed embedded in manure often is a problem because it reduces the ability of perennial native species to establish. The weed seed in the organic matter (manure) applied may have contributed to weed invasion on the East and North amendment plots. However, the invaders naturally inhabit some areas in the STSIU and the impact of weed seed in the manure is uncertain. In contrast, weed seed appeared to be minimal on the Northeast amendment plot, given the early invaders were the shrubs of lote bush, rabbit thorn, false mesquite, whiteball acacia, and an increase in mesquite. The amended Northeast plot still lost the late successional grass species of sideoats grama and blue grama, which were relatively abundant before the white rain. This pattern of increased shrubs and loss of gramas is indicative of the plot being set back to an earlier successional stage (Bestelmeyer et al. 2004, **Appendix B-3**) by disturbance, not by organic matter applications.

Figure B-21-2. Canopy cover and richness were not considerably different from the control when manure was applied at different rates (Bay et al. 2010).

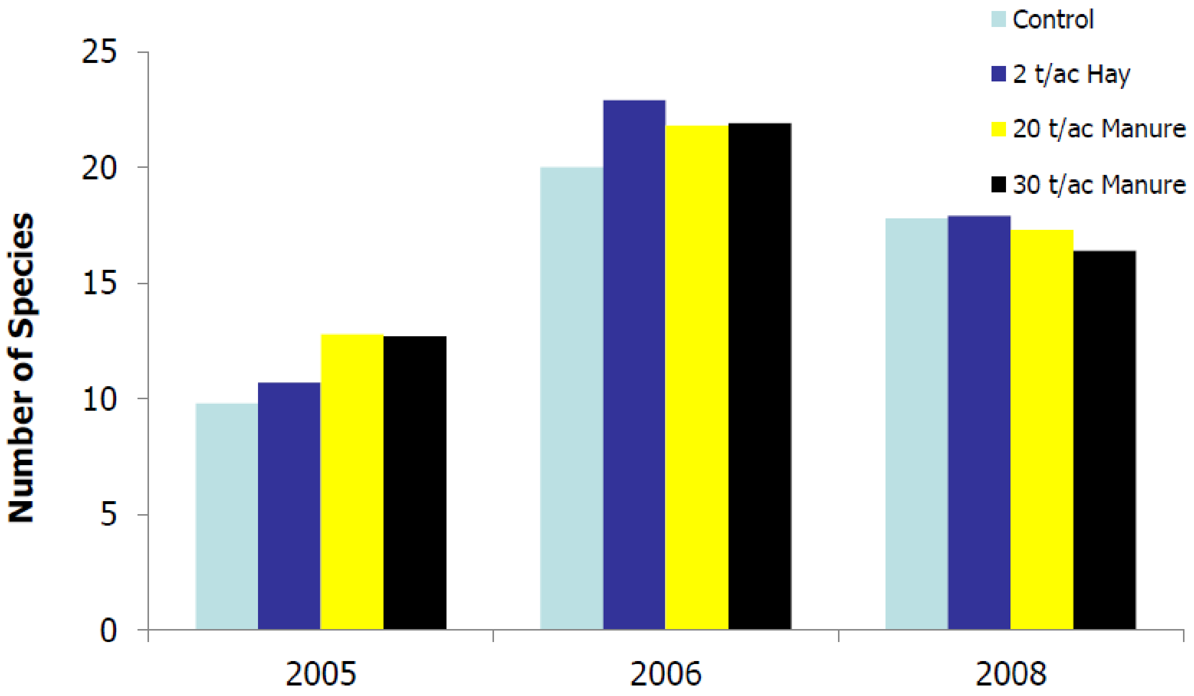


Photo 15. Morenci, low rate at 5 years

Photo 16. Morenci, intermediate rate at 5 years

Photo 17. Morenci, high rate at 5 years

Evidence is equivocal as to whether organic matter increased weedy species invasion on the North and East amendment plots. Organic matter can create a more favorable nutrient environment for the weeds to establish as well as introduce weed seed (Molles 2005). In contrast to the lower weed invasion in the Northeast amendment plot, the relatively flat North and East amendment plots with organic matter applied had TOC and more weedy annuals increase, annuals that were toxic to wildlife and cattle (golden crownbeard in East plot, carelessweed in North plot). The organic matter may have run downslope off the Northeast plot, sparing the plot from the weed invasion seen on the tilled plots and often seen in other study areas (Paschke et al. 2005, Ippolito et al 2010, Bay et al. 2010). The tilled haul road did not have a large amount of annual weedy species invading once Russian thistle died back after the first year, possibly because organic matter was not applied. Because annual weeds increased less on the plot that was not tilled but also less on the haul road that was tilled, other factors than tilling, possibly organic matter, may have increased undesirable weed invasion. However, only limited amounts of weed invasion occurred with (Northeast amendment plot) and without (haul road) organic matter applied, making this conclusion uncertain.

What is clear is that the rocky poor rangeland soils do not need organic matter, just tilling, to have high plant cover as shown by the haul road results. The fair rangeland plots also probably do not need organic matter as seen by the Northeast plot that did not exhibit a change in TOC, and the North amendment plot experienced a reduction in cover and degraded plant community after its application. Though the conclusion is tenuous, the weight of evidence suggests that organic matter is not very beneficial and possibly may do more harm than good to rangeland and wildlife habitat. It is not recommended as a remedial technology. **Table 20** summarizes the conclusions on the effect of organic matter application on plant communities. Additionally, **Table 20** summarizes these results and conclusions for all three technologies by presenting the apparent effectiveness of each separate technology on the primary metrics and final recommendations for use of each as a standalone treatment. As more information becomes available, these conclusions may be revised. The benefits of the combination of treatments and the information in this appendix is combined to develop the final conclusions in the main text.

Appendix B-22. Properties of the Canonical Correspondence Analysis

Overview of Canonical Correspondence Analysis Biplots

In this study, the Canonical Correspondence Analysis (CCA) acts to organize the sampling locations along numerous axes based on the relationship between their species composition, soil chemistry, and disturbance factor attributes. CCA axis 1 displays the maximum correlation between the sites and species. The remaining CCA axes display increasingly less correlation as additional axes are created. The majority of the variation in the data is displayed on the CCA axes 1 and 2; therefore, these axes are the only axes included in the results of this analysis. CCA axes are displayed on two biplots that show the distribution relative to environmental variables of (1) sampling events for each location and (2) individual species (**Figure 13a and Figure 13b**). The environmental parameters are added as vectors that show how the sampling events and the species are related to each soil chemistry and disturbance parameter.

Figure 13a

Figure 13a shows the biplots with all plots, including the West plots included. Both pCu (r^2 = 0.67, P = 0.001) and pH (r^2 = 0.66, P = 0.001) were most strongly correlated with the ordination, indicating that, of all the soil chemistry parameters measured, these two parameters accounted for most of the variation in species composition, whether the plot was amended or not. Copper concentration (r^2 = 0.41, P = 0.001) and soluble copper concentration (r^2 = 0.40, P = 0.002) are also correlated to the ordination, though not as strongly, and in an opposite direction of pCu and pH, as expected. Disturbance (most correlated to axis CCA1 because it is in the same direction) and tilling (binary variable represented by points [centroids] that fall along the diagonal axis at right angles to pH) are environmental variables also significantly correlated with the ordination in **Figure 13a** (r^2 = 0.42, P = 0.003 for disturbance; r^2 = 0.37, P = 0.001 for tilling).

As expected, the species in the non-West plots are associated with higher disturbance or tilling except during pre-amendment sampling events and during one East reference plot sampling event (**Figure 13a**). The post-treatment reference plots (D,E,F triangular symbols in **Figure 13a**) may have been influenced by the colonizers on the disturbed plots (or possibly were accidentally crushed by a vehicle), explaining why their plant communities are associated with a minor amount of disturbance when compared to their pre-treatment condition ("A" square symbol), though certainly less so than the amended plots. Note that the the West plots do not have an "A" plot because one of the chemical variables, copper, was not sampled in the first sampling event in May 2008.

Not surprisingly, tilling completely separates the plant community composition of the North and East amendment plots from their reference plots in **Figure 13a**. Total organic carbon (TOC) and carbon to nitrogen ratio (C:N) also tend to separate them (more TOC and lower C:N in treated plots), though they are not significantly correlated to the ordination ($P \geq 0.254$). Earliest successional communities occur right after tilling (indicated with letter B on biplot in **Figure 13a**) and are associated with high TOC and disturbance (near the ends of these arrows). On the untilled Northeast amendment plot, the early successional community composition (shown by B,C,D) is associated with high soluble copper. Later successional stages (E,F) are associated with lower concentrations of soluble copper and become more similar to the reference plot. Overall, the environmental variables accounted for 38 percent of the variation in species composition, meaning that 62 percent is explained by other factors (e.g., possibly rangeland condition, soil texture).

Figure 13b

When the two West control plots were removed from the analysis, as shown in **Figure 13b**, to only evaluate plots in the mesquite/grama alliance, 39 percent of the variation in species composition was explained by the environmental variables, similar to the biplots that included the West control plots in **Figure 13a**. The same general relationships between plot sampling events and environmental variables held except that TOC contributes significantly to separating amended and non-amended plots at the 90 percent confidence level ($r^2 = 0.25$, $P = 0.052$), and disturbance is almost as strongly related to the ordination as pCu and pH ($r^2 = 0.53$ vs. 0.60 for pCu and 0.54 for pH). The variable that best separates East and North amended plot communities from their untreated reference plots (**Figure 13b**) is TOC (higher TOC in plots with organic matter added). also separates them though less perfectly.

Soil pCu and pH (correlated with CCA1 axis) also tend to separate the amended and reference plot communities in the North plot (higher on amended plots) but less well for the East plot (**Figure 12b**) and neither separates these plots as well as TOC or tilling. For the Northeast plots, pH or pCu are not important for separating the treated and untreated plot. Also for the Northeast plots, time since disturbance (correlated with CCA2 axis and higher on amended plots) best separates communities of amended from untreated plots, and soluble copper is less important than when the West plots were included. The correlation with general disturbance was slightly stronger than the correlation with tilling alone ($r^2 = 0.53$, $P = 0.002$ versus $r^2 = 0.31$, $P = 0.001$, respectively).

Figure 13c

When the two West control plots were removed from the analysis and precipitation and season of the survey were included as environmental variables, as shown in **Figure 13c**, 46 percent of the variation in species composition was explained by the environmental variables, with relationships similar to the biplots without the West control plots that did not include season and precipitation (**Figure 13b**). Both season and precipitation were significantly correlated with the ordination at the 90 percent confidence level ($r^2 = 0.11$, $P = 0.064$ and $r^2 = 0.25$, $P = 0.055$, respectively) and had relationships with the ordination that were relatively similar to TOC (also significant at 90 percent confidence level, $r^2 = 0.20$, $P = 0.01$) and C:N (although non-significant, $P = 0.42$, and opposite of precipitation).

ARCADIS

Appendix C

Supporting Soil Charaterization Data

Appendix C-1
Pre-amendment Field Soil pH Results Collected in May/June 2008

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

North Plot pH Data Pre-amendment			Northeast Plot pH Data Pre-amendment			East pH Plot Data pre-amendment			West Plot pH Data pre-amendment		
Sample ID (depth range in inches)	**Date**	**pH[1]**	**Sample ID**	**Date**	**pH[1]**	**Sample ID**	**Date**	**pH[1]**	**Sample ID**	**Date**	**pH[1]**
Amendment Plot											
N-01(0-1)	5/31/2008	5.25	NE-01(0-1)	6/1/2008	5.25	E-01(0-1)	6/1/2008	5.46	W-01(0-1)	6/2/2008	7.56
N-01(0-6)	5/31/2008	6.32	NE-01(0-6)	6/1/2008	6.40	E-01(0-6)	6/1/2008	7.11	W-01(0-6)	6/2/2008	8.24
N-02(0-1)	5/31/2008	5.38	NE-02(0-1)	6/1/2008	5.25	E-02(0-1)	6/1/2008	5.68	W-02(0-1)	6/2/2008	8.08
N-02(0-6)	5/31/2008	6.46	NE-02(0-6)	6/1/2008	5.87	E-02(0-6)	6/1/2008	6.83	W-02(0-6)	6/2/2008	7.24
N-03(0-1)	5/31/2008	6.50	NE-03(0-1)	6/1/2008	4.78	E-03(0-1)	6/1/2008	3.77	W-03(0-1)	6/2/2008	7.79
N-03(0-6)	5/31/2008	6.95	NE-03(0-6)	6/1/2008	6.07	E-03(0-6)	6/1/2008	4.21	W-03(0-6)	6/2/2008	7.97
N-04(0-1)	5/31/2008	6.04	NE-04(0-1)	6/1/2008	5.42	E-04(0-1)	6/1/2008	4.04	W-04(0-1)	6/2/2008	7.78
N-04(0-6)	5/31/2008	6.70	NE-04(0-6)	6/1/2008	5.74	E-04(0-6)	6/1/2008	6.13	W-04(0-6)	6/2/2008	8.19
N-05(0-1)	5/31/2008	5.45	NE-05(0-1)	6/1/2008	4.85	E-05(0-1)	6/1/2008	4.95	W-05(0-1)	6/2/2008	8.13
N-05(0-6)	5/31/2008	6.75	NE-05(0-6)	6/1/2008	5.84	E-05(0-6)	6/1/2008	5.19	W-05(0-6)	6/2/2008	8.31
N-06(0-1)	5/31/2008	6.00	NE-06(0-1)	6/1/2008	5.60	E-06(0-1)	6/1/2008	5.16	W-06(0-1)	6/2/2008	8.07
N-06(0-6)	5/31/2008	7.22	NE-06(0-6)	6/1/2008	5.73	E-06(0-6)	6/1/2008	5.30	W-06(0-6)	6/2/2008	8.22
N-07(0-1)	5/31/2008	5.29	NE-07(0-1)	6/1/2008	5.36	E-07(0-1)	6/1/2008	4.48	W-07(0-1)	6/2/2008	8.13
N-07(0-6)	5/31/2008	6.33	NE-07(0-6)	6/1/2008	6.28	E-07(0-6)	6/1/2008	4.32	W-07(0-6)	6/2/2008	8.49
N-08(0-1)	5/31/2008	6.72	NE-08(0-1)	6/1/2008	5.45	E-08(0-1)	6/1/2008	6.15	W-08(0-1)	6/2/2008	8.26
N-08(0-6)	5/31/2008	7.19	NE-08(0-6)	6/1/2008	6.21	E-08(0-6)	6/1/2008	6.08	W-08(0-6)	6/2/2008	8.29
N-09(0-1)	5/31/2008	6.16	NE-09(0-1)	6/1/2008	5.39	E-09(0-1)	6/1/2008	5.85	W-09(0-1)	6/2/2008	8.09
N-09(0-6)	5/31/2008	6.50	NE-09(0-6)	6/1/2008	6.42	E-09(0-6)	6/1/2008	5.97	W-09(0-6)	6/2/2008	8.14
N-10(0-1)	5/31/2008	5.72	NE-10(0-1)	6/1/2008	5.05	E-10(0-1)	6/1/2008	3.74	W-10(0-1)	6/2/2008	8.40
N-10(0-6)	5/31/2008	6.79	NE-10(0-6)	6/1/2008	5.21	E-10(0-6)	6/1/2008	5.65	W-10(0-6)	6/2/2008	8.47
Reference Plot											
N-01 (N) 0-1	6/3/2008	5.75	NE-01 (S) 0-1	6/3/2008	5.22	E-01 (E) 0-1	6/3/2008	5.05	W-01 (W) 0-1	6/3/2008	8.03
N-01 (N) 0-6	6/4/2008	6.48	NE-01 (S) 0-6	6/4/2008	5.67	E-01 (E) 0-6	6/4/2008	4.35	W-01 (W) 0-6	6/6/2008	8.20
N-02 (N) 0-1	6/3/2008	5.57	NE-02 (S) 0-1	6/3/2008	5.08	E-02 (E) 0-1	6/3/2008	5.49	W-02 (W) 0-1	6/3/2008	7.66
N-02 (N) 0-6	6/4/2008	5.56	NE-02 (S) 0-6	6/4/2008	5.25	E-02 (E) 0-6	6/4/2008	4.99	W-02 (W) 0-6	6/6/2008	8.12
N-03 (N) 0-1	6/3/2008	5.74	NE-03 (S) 0-1	6/3/2008	5.23	E-03 (E) 0-1	6/3/2008	5.36	W-03 (W) 0-1	6/3/2008	7.68
N-03 (N) 0-6	6/4/2008	5.36	NE-03 (S) 0-6	6/4/2008	5.03	E-03 (E) 0-6	6/4/2008	3.92	W-03 (W) 0-6	6/6/2008	8.06
N-04 (N) 0-1	6/3/2008	6.32	NE-04 (S) 0-1	6/3/2008	5.05	E-04 (E) 0-1	6/3/2008	4.60	W-04 (W) 0-1	6/3/2008	7.46
N-04 (N) 0-6	6/4/2008	6.49	NE-04 (S) 0-6	6/4/2008	4.77	E-04 (E) 0-6	6/4/2008	5.12	W-04 (W) 0-6	6/6/2008	7.77
N-05 (N) 0-1	6/3/2008	6.05	NE-05 (S) 0-1	6/3/2008	4.96	E-05 (E) 0-1	6/3/2008	3.66	W-05 (W) 0-1	6/3/2008	7.96
N-05 (N) 0-6	6/4/2008	6.38	NE-05 (S) 0-6	6/4/2008	5.55	E-05 (E) 0-6	6/4/2008	4.56	W-05 (W) 0-6	6/6/2008	8.14
N-06 (N) 0-1	6/3/2008	5.14	NE-06 (S) 0-1	6/3/2008	4.95	E-06 (E) 0-1	6/3/2008	4.89	W-06 (W) 0-1	6/3/2008	7.92
N-06 (N) 0-6	6/4/2008	5.79	NE-06 (S) 0-6	6/4/2008	5.32	E-06 (E) 0-6	6/4/2008	5.08	W-06 (W) 0-6	6/6/2008	8.23
N-07 (N) 0-1	6/3/2008	5.20	NE-07 (S) 0-1	6/3/2008	4.97	E-07 (E) 0-1	6/3/2008	5.43	W-07 (W) 0-1	6/3/2008	8.00

Appendix C-1
Pre-amendment Field Soil pH Results Collected in May/June 2008

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

North Plot pH Data Pre-amendment			Northeast Plot pH Data Pre-amendment			East pH Plot Data pre-amendment			West Plot pH Data pre-amendment		
Sample ID (depth range in inches)	**Date**	**pH[1]**	**Sample ID**	**Date**	**pH[1]**	**Sample ID**	**Date**	**pH[1]**	**Sample ID**	**Date**	**pH[1]**
N-07 (N) 0-6	6/4/2008	5.41	NE-07 (S) 0-6	6/4/2008	5.13	E-07 (E) 0-6	6/4/2008	5.55	W-07 (W) 0-6	6/6/2008	8.27
N-08 (N) 0-1	6/3/2008	5.55	NE-08 (S) 0-1	6/3/2008	6.03	E-08 (E) 0-1	6/3/2008	5.35	W-08 (W) 0-1	6/3/2008	7.74
N-08 (N) 0-6	6/4/2008	5.83	NE-08 (S) 0-6	6/4/2008	6.44	E-08 (E) 0-6	6/4/2008	4.74	W-08 (W) 0-6	6/6/2008	8.01
N-09 (N) 0-1	6/3/2008	5.90	NE-09 (S) 0-1	6/3/2008	5.78	E-09 (E) 0-1	6/3/2008	4.64	W-09 (W) 0-1	6/3/2008	7.71
N-09 (N) 0-6	6/4/2008	5.35	NE-09 (S) 0-6	6/4/2008	6.06	E-09 (E) 0-6	6/4/2008	5.30	W-09 (W) 0-6	6/6/2008	7.80
N-10 (N) 0-1	6/3/2008	6.02	NE-10 (S) 0-1	6/3/2008	4.84	E-10 (E) 0-1	6/3/2008	5.53	W-10 (W) 0-1	6/3/2008	7.95
N-10 (N) 0-6	6/4/2008	6.17	NE-10 (S) 0-6	6/4/2008	5.74	E-10 (E) 0-6	6/4/2008	5.56	W-10 (W) 0-6	6/6/2008	7.94
Average pH within North Amendment Plot			Average pH within Northeast Amendment Plot			Average pH within East Amendment Plot			Average pH within Amendment West Plot		
	Avg pH of 0-1"	5.85		Avg pH of 0-1"	5.24		Avg pH of 0-1"	4.93		Avg pH of 0-1"	8.03
	Avg pH of 0-6"	6.72		Avg pH of 0-6"	5.98		Avg pH of 0-6"	5.68		Avg pH of 0-6"	8.16
Average pH in Reference (outside of plot)			Average pH in Reference (outside of plot)			Average pH in Reference (outside of plot)			Average pH in Reference (outside of plot)		
	Avg pH of 0-1"	5.72		Avg pH of 0-1"	5.21		Avg pH of 0-1"	5.00		Avg pH of 0-1"	7.81
	Avg pH of 0-6"	5.88		Avg pH of 0-6"	5.50		Avg pH of 0-6"	4.92		Avg pH of 0-6"	8.05
Average (0-6") 10 field & 2 lab samples in amendment plot (5/08)[2]		6.61	Average (0-6") 10 field & 2 lab samples in amendment plot (5/08)[2]		5.92	Average (0-6") 10 field & 2 lab samples in amendment plot (5/08)[2]		5.68	Average (0-6") 10 field & no lab samples in amendment plot		8.16

Notes:

1 - Sampled with field paste pH methods (100 g soil and 100 g water), sieving to < 2 mm.

2 - Average of 10 field and 2 lab samples sampled with laboratory methods described in text to compare to field data above

Appendix C-2
Less Collocated Baseline Surface Soil Copper Data used with pH in Reference Plots in May 2008 to calculate pCu

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot	Sample identification for Copper (not pH)	Source	Date Collected	Cu (mg/kg)[1]	May/June 2008 Amendment Plot pH[2]	pCu
Northeast Reference	S36 (U04-1070)	Sitewide RI	November-04	2779	5.25	3.10
Northeast Reference	U04-1001	AOC Background Report	May-95	3204	5.74	3.40
East Reference	S58 (U04-1093)	Sitewide RI	November-04	2385	5.25	3.28
East Reference	ERA 2	Sitewide ERA	September-09	811	4.59	3.91
North Reference	S3 (U04-1037)	Sitewide RI	November-04	1477	5.88	4.42
West Reference	S17 (U04-1051)	Sitewide RI	November-04	3255	8.16	5.63
West Reference	U04-1024	AOC Background Report	May-95	1836	8.05	6.18

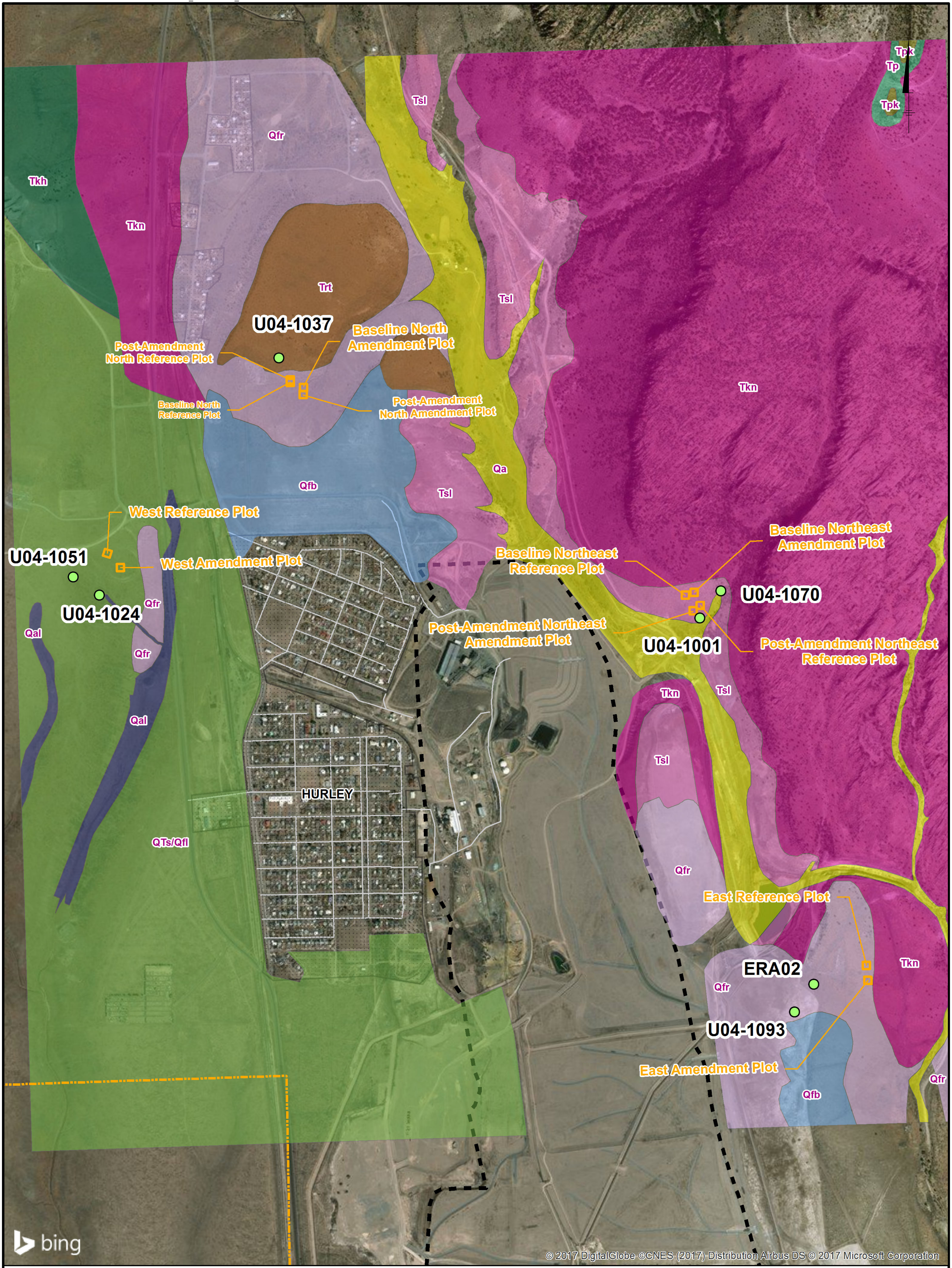
Notes:

1 -Copper data are from Arcadis (2017) white rain report, the table in Appendix E, where adjustments for sieving and depth of sample were made. This copper and the May/June 2008 pH value were used to calculate and capture pCu variability in these plots. See Figure A-16 for map of locations.

2 - pH sampled in adjacent reference plots (Appendix A-1) was combined with copper from the less collocated plots in this table to estimate pCu for the adjacent reference plots. When two less collocated plots are included (which represent variability), the 10 pH values in Appendix A-1 were split into two groups and averaged per group to obtain a value for each plot.

3 - Copper concentrations in red represent different geologic unit than amendment plot.

OFFICE: LAKEWOOD DB: MLM TM: MB
FREEPORT-MCMORAN, CHINO MINES (B0063543.0000)
Y:\CHINO\2017\MXDS\AMENDMENT STUDY\FIGA2-1_AMDPLOTS_GEOL.MXD



LEGEND:

● Less Collocated Samples
▭ Amendment Areas

Geology

- 🟩 QTs/Qfl - Talus
- 🟨 Qa - Alluvium (Holocene)
- 🟦 Qal - Alluvium
- 🟦 Qfb -Basalt-based fan deposits
- 🟪 Qfr - Rhyolite-based fan deposits
- 🟩 Tkh - Hornblende latite - Hurley sill
- 🟪 Tkn - Kneeling Nun tuff
- 🟩 Tp - Tuffaceous sandstone
- 🟨 Tpk - Box Canyon rhyolite tuff - welded tuff
- 🟫 Trt - Ash-flow tuff - Rubio Peak
- 🟪 Tsl - Sugarlump tuff

▭ Expanded AOC Boundary
▨ City Area
▭ Smelter Tailing Boundary

From Hedlund, D.C. 1978. Geologic map of the Hurley East Quadrangle, Grant County, New Mexico.
Interpreted by Pam Pinson, Geologist, Chino Mines Co.

0 1,000 2,000
Feet
GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

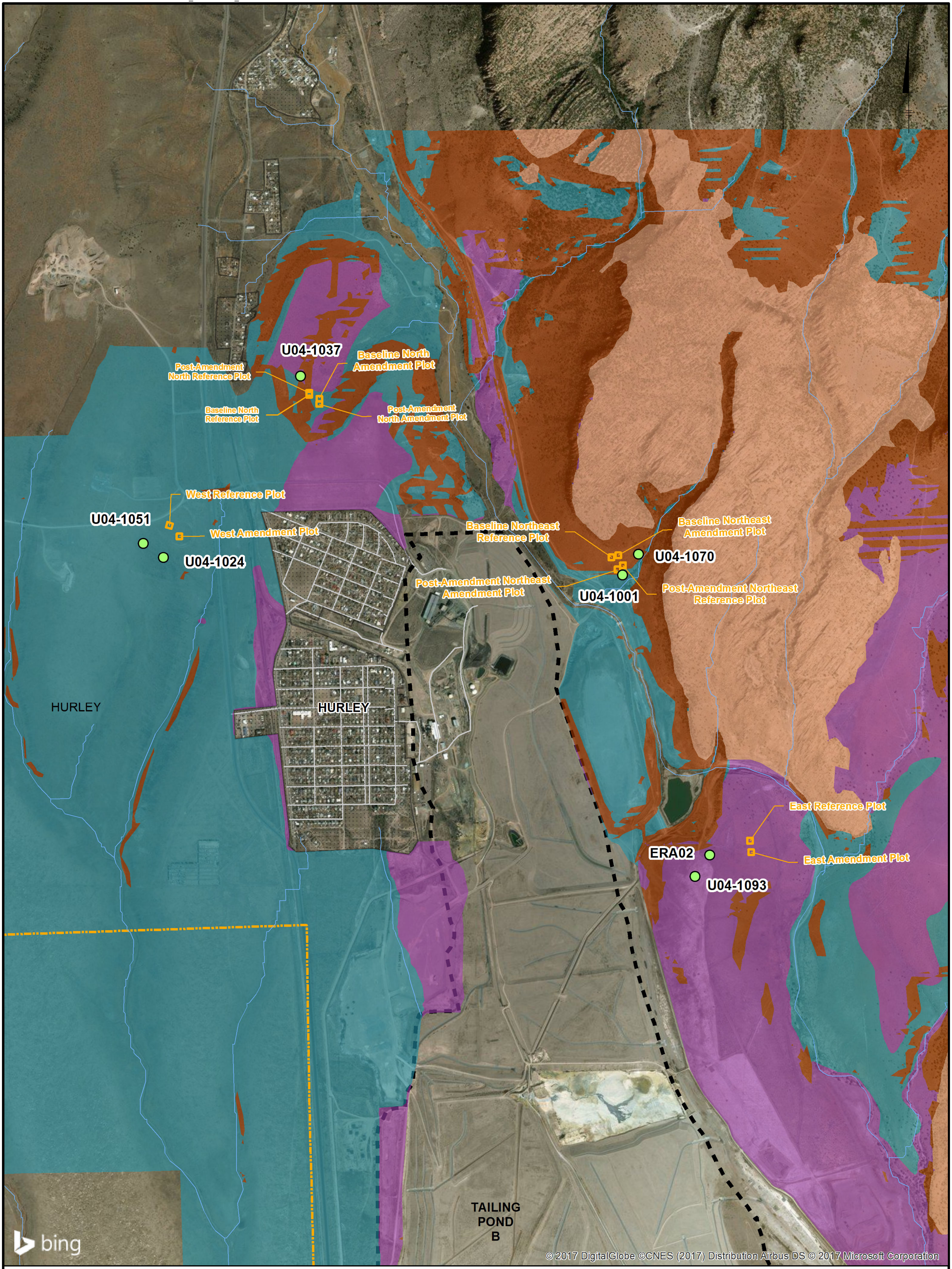
YEAR 5 MONITORING REPORT - AMENDMENT STUDY PLOTS

Geologic Units of Amendment Study Plot Locations

ARCADIS

FIGURE
C-2-1

OFFICE: LAKEWOOD DB: MLM TM: MB
FREEPORT-MCMORAN, CHINO MINES (B0063543.0000)
Y:\CHINO\2017\MXDS\AMENDMENT STUDY\FIGA2-2_AMDPLOTS_SOILCAT.MXD



LEGEND:

- ● Less Collocated Samples
- ☐ Amendment Areas

Soil Category

- 🟦 Flat Granular Soil
- 🟪 Flat Rocky Soil
- 🟫 Slope > 13%
- 🟧 Bedrock

- ☐ Expanded AOC Boundary
- ▨ City Area
- ☐ Smelter Tailing Boundary

0 1,000 2,000
Feet
GRAPHIC SCALE

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT - AMENDMENT STUDY PLOTS

Soil Categories of Amendment Study Plot Locations

ARCADIS

FIGURE
C-2-2

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
Northeast Amendment Plot - Lime and Organic Matter Only (2006 results were sampled in a slightly different location than December 2008 to 2012)							
BBL 005 Northeast 0-4"	7/12/2006	5.41	-	0.70	-	-	21.9
ARC 001 Northeast A 0-6"	5/7/2008	5.35	3,325	1.10	0.23	2.99	19.4
ARC 002 Northeast A 0-6"	5/7/2008	5.95	2,208	1.70	0.08	4.02	19.5
Northeast-003 0-6"	12/10/2008	4.23	2,818	1.30	7.6	2.14	18.3
Northeast-004 0-6"	12/10/2008	3.65	2,105	1.00	11.7	1.93	13.3
Northeast-01 0-6"	10/7/2009	5.69	3,594	1.42	2.28	3.21	7.3
Northeast-02 0-6"	10/6/2009	4.31	3,584	1.58	8.47	1.93	9.9
Northeast-03 0-6"	10/7/2009	6.28	1,228	1.23	0.37	5.00	9.1
Northeast-01 0-6"	4/21/2010	5.95	929	1.17	0.17	5.01	13.5
Northeast-02 0-6"	4/21/2010	5.98	982	1.28	0.12	4.98	9.8
Northeast-03 0-6"	4/21/2010	5.10	2,456	1.19	0.50	3.11	12.9
Northeast-01 0-6"	10/14/2010	4.83	2,415	1.01	6.80	2.87	13.7
Northeast-02 0-6"	10/14/2010	6.17	1,288	1.00	0.02	4.84	16.9
Northeast-01 0-6"	5/3/2011	6.59	580	1.73	0.13	6.15	14.4
Northeast-02 0-6"	5/3/2011	5.51	2,960	1.66	0.27	3.27	13.5
Northeast-03 0-6"	5/3/2011	6.41	2,130	3.15	1.28	4.49	16.1
Northeast-01 0-6"	10/7/2011	5.50	3,770	2.10	0.34	2.98	13.2
Northeast-02 0-6"	10/7/2011	5.40	2,310	1.20	0.15	3.46	12.3
Northeast-03 0-6"	10/7/2011	5.80	2,330	1.60	0.21	3.82	10.4
Northeast-01 0-6"	4/25/2012	4.80	2,470	1.50	0.69	2.82	8.7
Northeast-02 0-6"	4/25/2012	4.40	2,950	1.20	0.91	2.24	9.8
Northeast-03 0-6"	4/25/2012	5.90	2,130	1.40	0.96	4.01	10.3
Northeast-04 0-6"	4/25/2012	4.80	2,780	-	0.71	2.68	-
Northeast-05 0-6"	4/25/2012	4.90	2,850	-	0.57	2.75	-
Northeast-06 0-6"	4/25/2012	5.50	924	-	0.13	4.60	-
Northeast-07 0-6"	4/25/2012	6.40	2,720	-	0.40	4.20	-
Northeast-08 0-6"	4/25/2012	4.80	2,440	-	0.47	2.83	-
Northeast-01 0-6"	10/9/2012	5.20	3,750	1.50	1.43	2.71	10.1
Northeast-02 0-6"	10/9/2012	5.90	3,370	1.60	0.37	3.49	8.5
Northeast-03 0-6"	10/9/2012	6.50	1,110	1.50	0.07	5.32	9.4
Northeast-04 0-6"	10/9/2012	5.90	1,770	-	0.09	4.23	-
Northeast-05 0-6"	10/9/2012	5.30	2,670	-	0.26	3.20	-
Northeast-06 0-6"	10/9/2012	6.40	2,350	-	0.51	4.37	-
Northeast-07 0-6"	10/9/2012	5.20	2,390	-	0.20	3.23	-
Northeast-08 0-6"	10/9/2012	4.70	2,520	-	0.80	2.70	-
Northeast-01 0-6"	4/25/2013	4.80	4,090	2.00	1.73	2.24	8.3
Northeast-02 0-6"	4/25/2013	6.80	3,840	3.10	0.37	4.17	9.4
Northeast-03 0-6"	4/25/2013	6.30	2,010	1.30	0.51	4.45	9.4
Northeast-04 0-6"	4/25/2013	7.50	2,930	-	0.67	5.13	-
Northeast-05 0-6"	4/25/2013	5.00	2,690	-	0.28	2.91	-
Northeast-06 0-6"	4/25/2013	5.50	3,330	-	0.55	3.13	-
Northeast-07 0-6"	4/25/2013	5.60	1,770	-	0.25	3.95	-
Northeast-08 0-6"	4/25/2013	5.40	2,430	-	0.25	3.40	-
Northeast-01 0-6"	10/24/2013	7.10	2,190	2.00	0.55	5.10	13.4
Northeast-02 0-6"	10/24/2013	4.40	4,620	1.80	50.00	1.73	6.5
Northeast-03 0-6"	10/24/2013	5.30	2,780	1.70	2.15	3.15	16.6
Northeast-04 0-6"	10/24/2013	5.30	2,100	-	1.17	3.47	-
Northeast-05 0-6"	10/24/2013	5.00	1,840	-	3.56	3.34	-
Northeast-06 0-6"	10/24/2013	5.80	2,470	-	0.51	3.75	-
Northeast-07 0-6"	10/24/2013	5.20	1,910	-	0.87	3.49	-
Northeast-08 0-6"	10/24/2013	7.50	1,710	-	0.55	5.75	-

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
Northeast Reference Plot							
NE Ref 0-6"	4/21/2010	5.76	903	1.03	0.08	4.87	27.7
NE Ref-01 0-6"	10/14/2010	4.73	1,960	0.91	4.98	3.02	11.6
NE Ref-02 0-6"	10/14/2010	5.08	4,887	1.77	0.61	2.29	16.9
NE Ref-01 0-6"	5/3/2011	4.43	2,570	2.59	15.60	2.43	20.5
NE Ref-02 0-6"	5/3/2011	4.72	3,040	3.25	10.80	2.51	21.1
NE Ref-01 0-6"	10/7/2011	4.20	4,050	1.30	6.29	1.69	10.0
NE Ref-02 0-6"	10/7/2011	5.00	2,420	1.30	0.21	3.03	9.8
NE Ref-01 0-6"	4/25/2012	5.10	3,720	1.40	0.66	2.63	12.0
NE Ref-02 0-6"	4/25/2012	4.20	2,140	1.00	0.84	2.43	10.9
NE Ref-03 0-6"	4/25/2012	4.40	2,600	-	0.40	2.39	-
NE Ref-04 0-6"	4/25/2012	5.30	2,510	-	0.45	3.27	-
NE Ref-05 0-6"	4/25/2012	5.00	2,570	-	0.35	2.96	-
NE Ref-06 0-6"	4/25/2012	4.90	2,670	-	0.26	2.82	-
NE Ref-07 0-6"	4/25/2012	4.20	1,870	-	0.23	2.58	-
NE Ref-08 0-6"	4/25/2012	4.90	2,770	-	0.68	2.78	-
NE Ref-01 0-6"	10/9/2012	6.40	1,760	1.60	0.35	4.70	25.0
NE Ref-02 0-6"	10/9/2012	5.00	2,040	1.70	0.27	3.23	21.0
NE Ref-03 0-6"	10/9/2012	5.40	3,540	-	0.52	2.96	-
NE Ref-04 0-6"	10/9/2012	5.60	1,510	-	0.45	4.13	-
NE Ref-05 0-6"	10/9/2012	5.90	1,490	-	0.22	4.42	-
NE Ref-06 0-6"	10/9/2012	5.80	1,070	-	0.15	4.71	-
NE Ref-07 0-6"	10/9/2012	4.70	3,240	-	0.55	2.42	-
NE Ref-08 0-6"	10/9/2012	5.10	3,490	-	0.37	2.70	-
NE Ref-01 0-6"	4/25/2013	5.10	3,630	1	0.81	2.66	7.5
NE Ref-02 0-6"	4/25/2013	4.70	3,080	2	0.93	2.47	6.7
NE Ref-03 0-6"	4/25/2013	5.70	3,860	-	0.62	3.14	-
NE Ref-04 0-6"	4/25/2013	5.30	3,450	-	0.54	2.90	-
NE Ref-05 0-6"	4/25/2013	5.00	2,000	-	0.22	3.25	-
NE Ref-06 0-6"	4/25/2013	5.40	3,130	-	0.53	3.11	-
NE Ref-07 0-6"	4/25/2013	4.20	2,520	-	2.98	2.24	-
NE Ref-08 0-6"	4/25/2013	4.50	2,640	-	0.70	2.46	-
NE Ref-01 0-6"	10/23/2013	5.30	1,040	1.10	4.20	4.28	10.1
NE Ref-02 0-6"	10/23/2013	4.40	1,950	1.10	35.70	2.72	10.1
NE Ref-03 0-6"	10/23/2013	4.60	2,340	-	14.40	2.70	-
NE Ref-04 0-6"	10/23/2013	4.80	1,840	-	7.96	3.16	-
NE Ref-05 0-6"	10/23/2013	7.50	3,400	-	1.29	4.96	-
NE Ref-06 0-6"	10/23/2013	5.20	2,010	-	4.10	3.43	-
NE Ref-07 0-6"	10/23/2013	5.50	1,560	-	0.69	4.00	-
NE Ref-08 0-6"	10/23/2013	5.50	2,040	-	0.85	3.69	-

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
East Amendment Plot - Lime and Organic Matter with Tilling							
BBL 006 East 0-1"[3]	7/12/2006	6.54	-	0.42	-	-	14.3
BBL 006 East 2-4"[3]	7/12/2006	4.38	-	1.54	-	-	17.3
BBL 007 East 0-1"[3]	7/12/2006	6.41	-	0.49	-	-	15.9
BBL 007 East 2-4"[3]	7/12/2006	3.45	-	1.21	-	-	14.6
ARC 001 East B 0-6"	5/7/2008	4.18	1,474	0.44	0.18	2.84	17.7
ARC 002 East B 0-6"	5/7/2008	7.18	762	0.98	0.01	6.38	16.6
East-003 0-6"	12/10/2008	5.10	1,263	1.10	0.33	3.87	19.1
East-004 0-6"	12/10/2008	7.39	774	1.50	0.28	6.56	16.7
East-01 0-6"	10/6/2009	7.86	418	1.72	0.11	7.71	7.4
East-02 0-6"	10/6/2009	7.15	1,049	1.53	0.09	5.99	9.3
East-03 0-6"	10/6/2009	6.75	927	1.26	0.58	5.76	9.2
East-01 0-6"	4/21/2010	6.92	1,003	1.08	0.43	5.82	8.5
East-02 0-6"	4/21/2010	7.18	551	0.86	0.09	6.76	7.2
East-03 0-6"	4/21/2010	7.62	1,121	2.61	0.38	6.35	12.9
East-01 0-6"	10/14/2010	6.58	1,371	1.47	0.38	5.15	12.4
East-02 0-6"	10/14/2010	5.97	1,191	1.20	0.49	4.75	9.8
East-01 0-6"	5/3/2011	7.36	1,250	3.37	0.52	5.98	14.7
East-02 0-6"	5/3/2011	7.54	899	3.87	0.22	6.53	11.4
East-03 0-6"	5/3/2011	7.70	717	2.21	0.23	6.94	13.0
East-01 0-6"	10/6/2011	7.20	495	1.10	0.02	6.90	11.1
East-02 0-6"	10/6/2011	6.40	1,030	1.20	0.20	5.31	12.1
East-03 0-6"	10/6/2011	5.00	1,080	1.10	0.12	3.96	14.2
East-01 0-6"	4/24/2012	7.10	355	0.90	0.14	7.19	9.0
East-02 0-6"	4/24/2012	7.30	716	1.80	0.52	6.57	6.8
East-03 0-6"	4/24/2012	7.30	803	1.10	0.70	6.44	6.8
East-04 0-6"	4/24/2012	7.10	1,610	-	0.52	5.45	-
East-05 0-6"	4/24/2012	7.20	645	-	0.51	6.60	-
East-06 0-6"	4/24/2012	7.50	838	-	0.67	6.57	-
East-07 0-6"	4/24/2012	7.40	276	-	0.14	7.76	-
East-08 0-6"	4/24/2012	6.50	1,080	-	0.18	5.35	-
East-01 0-6"	10/10/2012	7.20	542	1.30	0.10	6.80	9.0
East-02 0-6"	10/10/2012	7.40	468	2.00	0.12	7.15	6.7
East-03 0-6"	10/10/2012	7.70	791	2.10	0.36	6.83	14.0
East-04 0-6"	10/10/2012	7.60	924	-	0.26	6.55	-
East-05 0-6"	10/10/2012	7.50	714	-	0.13	6.76	-
East-06 0-6"	10/10/2012	7.60	972	-	0.30	6.50	-
East-07 0-6"	10/10/2012	7.80	417	-	0.21	7.66	-
East-08 0-6"	10/10/2012	7.30	791	-	0.14	6.45	-
East-01 0-6"	4/24/2013	6.90	1,050	1	0.45	5.76	5.9
East-02 0-6"	4/24/2013	7.20	200	1	0.10	7.94	6.8
East-03 0-6"	4/24/2013	4.40	1,080	1	0.89	3.40	8.9
East-04 0-6"	4/24/2013	7.10	800	-	0.34	6.26	-
East-05 0-6"	4/24/2013	7.00	626	-	0.45	6.44	-
East-06 0-6"	4/24/2013	7.10	734	-	0.23	6.35	-
East-07 0-6"	4/24/2013	4.90	1,140	-	0.33	3.80	-
East-08 0-6"	4/24/2013	6.70	812	-	0.35	5.87	-
East-01 0-6"	10/25/2013	7.70	743	2.70	0.18	6.90	7.4
East-02 0-6"	10/25/2013	6.30	865	0.90	0.28	5.42	7.8
East-03 0-6"	10/25/2013	5.60	1,020	0.90	0.26	4.58	7.2
East-04 0-6"	10/25/2013	7.60	699	-	0.13	6.88	-
East-05 0-6"	10/25/2013	7.50	851	-	0.16	6.56	-
East-06 0-6"	10/25/2013	6.70	605	-	0.12	6.20	-
East-07 0-6"	10/25/2013	7.30	1,070	-	0.09	6.11	-
East-08 0-6"	10/25/2013	7.60	1,000	-	0.16	6.46	-

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
East Reference Plot							
East Ref 0-6"	4/21/2010	4.16	1,032	0.81	3.71	3.23	10.4
East Ref-01 0-6"	10/14/2010	4.47	1,168	0.73	9.71	3.37	11.7
East Ref-02 0-6"	10/14/2010	4.67	1,319	0.88	2.72	3.42	11.0
East Ref-01 0-6"	5/3/2011	5.06	1,450	0.91	3.86	3.67	11.0
East Ref-02 0-6"	5/3/2011	4.68	1,200	0.91	0.69	3.54	16.1
East Ref-01 0-6"	10/6/2011	4.70	1,240	0.80	0.07	3.52	9.0
East Ref-02 0-6"	10/6/2011	4.70	1,400	0.50	0.39	3.38	12.3
East Ref-01 0-6"	4/24/2012	5.20	1,150	0.60	0.16	4.07	9.1
East Ref-02 0-6"	4/24/2012	4.90	1,120	0.60	0.13	3.82	11.3
East Ref-03 0-6"	4/24/2012	6.70	808	-	0.07	5.87	-
East Ref-04 0-6"	4/24/2012	4.40	1,060	-	0.18	3.42	-
East Ref-05 0-6"	4/24/2012	5.20	1,200	-	0.07	4.02	-
East Ref-06 0-6"	4/24/2012	7.50	1,740	-	0.13	5.73	-
East Ref-07 0-6"	4/24/2012	4.60	1,370	-	0.24	3.31	-
East Ref-08 0-6"	4/24/2012	6.70	1,190	-	0.12	5.43	-
East Ref-01 0-6"	10/10/2012	5.20	1,240	0.90	0.17	3.98	11.8
East Ref-02 0-6"	10/10/2012	6.90	910	0.80	0.03	5.92	15.1
East Ref-03 0-6"	10/10/2012	7.50	1,270	-	0.05	6.10	-
East Ref-04 0-6"	10/10/2012	5.30	1,030	-	0.09	4.29	-
East Ref-05 0-6"	10/10/2012	6.30	918	-	0.07	5.35	-
East Ref-06 0-6"	10/10/2012	7.50	1,290	-	0.08	6.08	-
East Ref-07 0-6"	10/10/2012	7.80	1,700	-	0.44	6.04	-
East Ref-08 0-6"	10/10/2012	6.00	1,140	-	0.55	4.83	-
East Ref-01 0-6"	4/24/2013	5.90	1,020	0.90	0.05	4.86	9.9
East Ref-02 0-6"	4/24/2013	6.90	864	0.60	0.06	5.98	7.9
East Ref-03 0-6"	4/24/2013	5.40	904	-	0.21	4.53	-
East Ref-04 0-6"	4/24/2013	5.70	1,130	-	0.09	4.56	-
East Ref-05 0-6"	4/24/2013	4.40	1,290	-	0.33	3.20	-
East Ref-06 0-6"	4/24/2013	4.50	1,040	-	0.98	3.54	-
East Ref-07 0-6"	4/24/2013	5.10	1,130	-	0.14	4.00	-
East Ref-08 0-6"	4/24/2013	7.00	1,420	-	0.08	5.50	-
East Ref-01 0-6"	10/25/2013	6.10	1,040	0.60	0.18	5.02	9.5
East Ref-02 0-6"	10/25/2013	4.80	978	0.70	3.59	3.89	8.6
East Ref-03 0-6"	10/25/2013	7.20	1,720	-	0.12	5.47	-
East Ref-04 0-6"	10/25/2013	5.10	777	-	0.50	4.43	-
East Ref-05 0-6"	10/25/2013	4.40	747	-	4.26	3.82	-
East Ref-06 0-6"	10/25/2013	6.70	1,300	-	0.07	5.33	-
East Ref-07 0-6"	10/25/2013	5.90	918	-	0.11	4.98	-
East Ref-08 0-6"	10/25/2013	7.40	1,320	-	0.09	5.96	-

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Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

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Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
North Amendment Plot - Lime and Organic Matter with Tilling (2006 and spring 2008 results were sampled in a slightly different location than December 2008 to 2012)							
BBL 001 NORTH 0-5"	7/12/2006	3.45	-	1.07	-	-	13.6
BBL 002 NORTH 0-5"	7/12/2006	3.93	-	1.25	-	-	15.5
ARC 001 NORTH 0-6"	5/8/2008	5.92	2,746	1.40	0.44	3.74	18.9
ARC 002 NORTH 0-6"	5/8/2008	6.15	1,219	1.10	0.07	4.88	26.3
North-003 0-6"	12/10/2008	6.63	2,694	2.70	1.36	4.42	27.1
North-004 0-6"	12/10/2008	6.54	864	1.20	0.18	5.65	18.9
North-005 0-6"	12/10/2008	6.77	1,058	1.20	0.20	5.62	30.3
North-01 0-6"	10/6/2009	5.88	1,453	1.63	0.17	4.44	13.0
North-02 0-6"	10/6/2009	6.69	997	1.16	0.30	5.62	8.4
North-03 0-6"	10/6/2009	5.76	2,105	1.97	0.25	3.90	14.0
North-01 0-6"	4/20/2010	7.66	994	0.89	0.02	6.53	12.1
North-02 0-6"	4/20/2010	6.74	585	0.80	0.04	6.28	9.4
North-03 0-6"	4/20/2010	5.64	1,546	1.99	0.45	4.14	10.0
North-01 0-6"	10/13/2010	7.14	597	0.95	0.03	6.63	23.7
North-02 0-6"	10/13/2010	6.01	1,148	1.00	0.13	4.82	13.3
North-01 0-6"	5/2/2011	5.59	2,050	2.67	0.45	3.77	14.7
North-02 0-6"	5/2/2011	6.54	752	1.89	0.25	5.81	19.1
North-03 0-6"	5/2/2011	5.55	2,050	1.31	0.88	3.73	17.4
North-01 0-6"	10/5/2011	5.40	2,320	1.80	0.33	3.45	9.0
North-02 0-6"	10/5/2011	5.90	1,080	1.30	0.18	4.79	8.9
North-03 0-6"	10/5/2011	5.80	990	1.20	0.15	4.80	9.6
North-01 0-6"	4/25/2012	6.30	325	1.00	0.07	6.55	13.5
North-02 0-6"	4/25/2012	7.70	889	2.00	1.11	6.69	7.3
North-03 0-6"	4/25/2012	6.10	200	1.10	0.06	6.92	11.6
North-04 0-6"	4/25/2012	7.40	738	-	0.60	6.63	-
North-05 0-6"	4/25/2012	7.60	1,180	-	0.33	6.27	-
North-06 0-6"	4/25/2012	6.10	1,410	-	0.60	4.67	-
North-07 0-6"	4/25/2012	7.00	869	-	0.25	6.07	-
North-08 0-6"	4/25/2012	5.50	1,740	-	0.42	3.87	-
North-01 0-6"	10/9/2012	7.00	1,590	2.10	0.35	5.37	7.3
North-02 0-6"	10/9/2012	7.00	1,680	2.40	0.36	5.31	10.0
North-03 0-6"	10/9/2012	7.10	991	1.20	0.23	6.01	13.7
North-04 0-6"	10/9/2012	7.20	378	-	0.04	7.21	-
North-05 0-6"	10/9/2012	7.50	1,030	-	0.24	6.34	-
North-06 0-6"	10/9/2012	7.10	1,250	-	0.17	5.74	-
North-07 0-6"	10/9/2012	7.10	1,710	-	0.80	5.38	-
North-08 0-6"	10/9/2012	7.50	460	-	0.09	7.26	-
North-01 0-6"	4/24/2013	6.40	934	1.40	0.24	5.43	11.4
North-02 0-6"	4/24/2013	6.80	536	1.20	0.29	6.44	8.6
North-03 0-6"	4/24/2013	6.80	958	1.40	0.39	5.77	11.4
North-04 0-6"	4/24/2013	7.20	1,010	-	0.70	6.08	-
North-05 0-6"	4/24/2013	6.40	1,260	-	0.51	5.08	-
North-06 0-6"	4/24/2013	5.70	1,280	-	0.25	4.41	-
North-07 0-6"	4/24/2013	7.30	334	-	0.16	7.45	-
North-08 0-6"	4/24/2013	7.40	596	-	0.23	6.87	-
North-01 0-6"	10/24/2013	6.00	656	1.10	0.12	5.46	20.0
North-02 0-6"	10/24/2013	5.90	1,490	1.30	0.66	4.42	9.5
North-03 0-6"	10/24/2013	5.70	1,460	1.10	0.37	4.26	11.7
North-04 0-6"	10/24/2013	6.80	418	-	0.05	6.72	-
North-05 0-6"	10/24/2013	7.60	210	-	0.07	8.26	-
North-06 0-6"	10/24/2013	6.10	1,340	-	0.39	4.73	-
North-07 0-6"	10/24/2013	5.00	1,740	-	3.02	3.41	-
North-08 0-6"	10/24/2013	6.30	459	-	0.06	6.15	-

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Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
North Reference Plot							
North Ref 0-6"	4/20/2010	5.26	946	0.82	0.55	4.35	23.9
North Ref-01 0-6"	10/13/2010	5.54	1,220	0.83	1.08	4.32	11.6
North Ref-02 0-6"	10/13/2010	5.59	1,340	0.62	0.30	4.25	44.0
North Ref-01 0-6"	5/2/2011	6.35	900	0.94	0.06	5.42	10.9
North Ref-02 0-6"	5/2/2011	5.09	1,490	0.78	1.76	3.67	11.9
North Ref-01 0-6"	10/5/2011	6.40	821	1.30	0.08	5.57	11.5
North Ref-02 0-6"	10/5/2011	5.10	901	1.20	0.06	4.26	11.6
North Ref-01 0-6"	4/25/2012	6.20	168	1.10	0.03	7.21	13.9
North Ref-02 0-6"	4/25/2012	7.00	372	0.60	0.06	7.04	15.3
North Ref-03 0-6"	4/25/2012	5.40	952	-	0.22	4.47	-
North Ref-04 0-6"	4/25/2012	5.20	1,640	-	0.38	3.66	-
North Ref-05 0-6"	4/25/2012	6.10	891	-	0.08	5.20	-
North Ref-06 0-6"	4/25/2012	5.80	1,280	-	0.17	4.51	-
North Ref-07 0-6"	4/25/2012	4.90	2,000	-	0.40	3.16	-
North Ref-08 0-6"	4/25/2012	5.30	1,580	-	0.28	3.80	-
North Ref-01 0-6"	10/9/2012	6.20	1,080	0.50	0.25	5.07	20.7
North Ref-02 0-6"	10/9/2012	7.20	425	0.70	0.07	7.08	30.4
North Ref-03 0-6"	10/9/2012	6.30	1,160	-	0.26	5.08	-
North Ref-04 0-6"	10/9/2012	5.90	1,780	-	0.41	4.22	-
North Ref-05 0-6"	10/9/2012	5.80	855	-	0.19	4.97	-
North Ref-06 0-6"	10/9/2012	5.40	1,570	-	0.33	3.90	-
North Ref-07 0-6"	10/9/2012	5.50	1,060	-	0.22	4.44	-
North Ref-08 0-6"	10/9/2012	6.00	621	-	0.17	5.52	-
North Ref-01 0-6"	4/24/2013	5.20	895	1	0.07	4.36	9.1
North Ref-02 0-6"	4/24/2013	6.10	317	1	0.05	6.39	13.1
North Ref-03 0-6"	4/24/2013	6.40	74	-	0.02	8.34	-
North Ref-04 0-6"	4/24/2013	6.20	292	-	0.03	6.58	-
North Ref-05 0-6"	4/24/2013	6.80	428	-	0.04	6.70	-
North Ref-06 0-6"	4/24/2013	6.10	770	-	0.09	5.37	-
North Ref-07 0-6"	4/24/2013	6.00	642	-	0.07	5.49	-
North Ref-08 0-6"	4/24/2013	7.00	607	-	0.07	6.48	-
North Ref-01 0-6"	10/25/2013	6.00	782	0.90	0.16	5.26	10.2
North Ref-02 0-6"	10/25/2013	5.80	886	0.80	0.18	4.93	8.8
North Ref-03 0-6"	10/25/2013	6.80	960	-	0.17	5.77	-
North Ref-04 0-6"	10/25/2013	5.60	244	-	0.04	6.23	-
North Ref-05 0-6"	10/25/2013	5.80	1,020	-	0.54	4.77	-
North Ref-06 0-6"	10/25/2013	5.80	682	-	0.30	5.23	-
North Ref-07 0-6"	10/25/2013	5.30	761	-	1.04	4.64	-
North Ref-08 0-6"	10/25/2013	5.20	744	-	0.70	4.57	-

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
West Amendment Plot (control)							
BBL 003 WEST 0-4"	7/12/2006	6.28	-	1.95	-	-	22.7
BBL 004 WEST 0-4"	7/12/2006	6.69	-	1.86	-	-	26.2
West-003 0-6"	12/10/2008	7.29	1,526	1.10	0.02	5.69	35.2
West-004 0-6"	12/10/2008	7.50	1,232	1.10	0.02	6.13	22.4
West-01 0-6"	10/6/2009	7.70	606	0.66	0.01	7.13	8.3
West-02 0-6"	10/6/2009	7.41	1,557	1.23	0.10	5.78	9.4
West-03 0-6"	10/6/2009	7.57	924	0.95	0.02	6.53	9.2
West-01 0-6"	4/20/2010	7.29	722	1.20	<0.01	6.55	9.1
West-02 0-6"	4/20/2010	7.85	798	0.91	<0.01	6.95	10.4
West-03 0-6"	4/20/2010	8.00	552	1.27	<0.01	7.52	11.7
West-01 0-6"	10/13/2010	8.17	1,019	1.11	0.02	6.97	12.1
West-02 0-6"	10/13/2010	8.39	1,112	1.07	0.02	7.08	10.8
West-01 0-6"	5/3/2011	7.64	2,090	1.14	0.07	5.65	15.7
West-02 0-6"	5/3/2011	7.67	3,560	2.33	0.10	5.07	25.3
West-03 0-6"	5/3/2011	7.32	1,130	1.67	0.09	6.06	20.9
West-01 0-6"	10/4/2011	7.80	880	1.60	0.03	6.80	12.3
West-02 0-6"	10/4/2011	7.70	2,440	1.80	0.06	5.53	10.9
West-03 0-6"	10/4/2011	7.80	761	1.40	0.03	6.96	9.6
West-01 0-6"	4/26/2012	7.70	1,830	1.20	0.10	5.86	14.4
West-02 0-6"	4/26/2012	7.60	741	1.30	0.05	6.81	20.0
West-03 0-6"	4/26/2012	7.60	2,170	1.40	0.19	5.57	12.2
West-04 0-6"	4/26/2012	7.30	3,510	-	0.42	4.74	-
West-05 0-6"	4/26/2012	7.70	2,970	-	0.21	5.31	-
West-06 0-6"	4/26/2012	7.70	1,470	-	0.12	6.11	-
West-07 0-6"	4/26/2012	7.30	1,730	-	0.17	5.55	-
West-08 0-6"	4/26/2012	7.30	2,610	-	0.31	5.08	-
West-01 0-6"	10/8/2012	7.60	1,880	1.30	0.08	5.74	10.2
West-02 0-6"	10/8/2012	7.40	1,640	1.10	0.06	5.71	9.9
West-03 0-6"	10/8/2012	7.80	1,300	0.90	0.04	6.35	13.4
West-04 0-6"	10/8/2012	7.50	1,930	-	0.08	5.61	-
West-05 0-6"	10/8/2012	7.40	1,750	-	0.05	5.63	-
West-06 0-6"	10/8/2012	7.80	510	-	0.01	7.42	-
West-07 0-6"	10/8/2012	7.70	1,940	-	0.05	5.79	-
West-08 0-6"	10/8/2012	7.40	3,570	-	0.18	4.81	-
West-01 0-6"	4/23/2013	7.50	2,370	1	0.10	5.38	11.8
West-02 0-6"	4/23/2013	7.50	1,850	1	0.13	5.66	10.8
West-03 0-6"	4/23/2013	7.30	3,410	1	0.27	4.77	10.0
West-04 0-6"	4/23/2013	7.40	2,060	-	0.14	5.45	-
West-05 0-6"	4/23/2013	7.20	2,450	-	0.29	5.06	-
West-06 0-6"	4/23/2013	7.60	1,320	-	0.09	6.14	-
West-07 0-6"	4/23/2013	7.40	1,630	-	0.11	5.72	-
West-08 0-6"	4/23/2013	7.50	2,300	-	0.19	5.41	-
West-01 0-6"	10/24/2013	7.60	1,450	1.20	0.03	6.04	12.2
West-02 0-6"	10/24/2013	7.70	1,650	1.10	0.05	5.98	10.9
West-03 0-6"	10/24/2013	7.60	793	1.10	0.01	6.73	8.0
West-04 0-6"	10/24/2013	7.70	2,220	-	0.03	5.64	-
West-05 0-6"	10/24/2013	7.80	2,800	-	0.03	5.47	-
West-06 0-6"	10/24/2013	7.90	1,180	-	0.02	6.55	-
West-07 0-6"	10/24/2013	7.60	2,320	-	0.04	5.50	-
West-08 0-6"	10/24/2013	7.50	1,720	-	0.02	5.75	-

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
West Reference Plot (since amendment plot was not treated, West amendment and West reference plots are replicate							
West Ref 0-6"	4/20/2010	8.03	474	1.21	<0.01	7.73	9.7
West Ref-01 0-6"	10/13/2010	8.42	1,309	1.40	<0.01	6.92	16.1
West Ref-02 0-6"	10/13/2010	8.54	962	1.40	0.01	7.39	16.0
West Ref-01 0-6"	10/4/2011	7.80	731	1.30	0.02	7.01	15.2
West Ref-02 0-6"	10/4/2011	7.80	690	1.80	0.03	7.08	13.6
West Ref-01 0-6"	4/26/2012	7.50	3,600	1.00	0.29	4.90	14.4
West Ref-02 0-6"	4/26/2012	7.50	2,760	1.50	0.21	5.20	15.9
West Ref-03 0-6"	4/26/2012	7.70	371	-	0.06	7.70	-
West Ref-04 0-6"	4/26/2012	7.70	2,250	-	0.09	5.62	-
West Ref-05 0-6"	4/26/2012	7.70	972	-	0.10	6.59	-
West Ref-06 0-6"	4/26/2012	7.60	836	-	0.06	6.67	-
West Ref-07 0-6"	4/26/2012	7.70	3,290	-	0.58	5.19	-
West Ref-08 0-6"	4/26/2012	7.70	420	-	0.07	7.55	-
West Ref-01 0-6"	10/8/2012	7.90	1,380	1.10	0.03	6.37	10.4
West Ref-02 0-6"	10/8/2012	7.90	1,060	1.30	0.02	6.68	10.6
West Ref-03 0-6"	10/8/2012	7.90	648	-	0.02	7.24	-
West Ref-04 0-6"	10/8/2012	8.00	1,970	-	0.06	6.06	-
West Ref-05 0-6"	10/8/2012	8.20	850	-	0.02	7.21	-
West Ref-06 0-6"	10/8/2012	8.10	1,160	-	0.04	6.76	-
West Ref-07 0-6"	10/8/2012	8.10	356	-	0.02	8.12	-
West Ref-08 0-6"	10/8/2012	8.10	1,480	-	0.05	6.48	-
West Ref-01 0-6"	4/23/2013	7.80	746	1	0.02	6.99	13.3
West Ref-02 0-6"	4/23/2013	7.80	1,530	1	0.08	6.16	8.5
West Ref-03 0-6"	4/23/2013	7.70	1,740	-	0.12	5.92	-
West Ref-04 0-6"	4/23/2013	7.60	2,240	-	0.08	5.54	-
West Ref-05 0-6"	4/23/2013	7.60	1,110	-	0.06	6.34	-
West Ref-06 0-6"	4/23/2013	7.70	984	-	0.03	6.58	-
West Ref-07 0-6"	4/23/2013	7.70	1,440	-	0.03	6.14	-
West Ref-08 0-6"	4/23/2013	7.60	1,740	-	0.05	5.83	-
West Ref-01 0-6"	10/24/2013	7.60	1,010	1.20	0.02	6.45	13.3
West Ref-02 0-6"	10/24/2013	7.50	1,560	1.10	0.05	5.86	10.4
West Ref-03 0-6"	10/24/2013	7.60	591	-	0.02	7.07	-
West Ref-04 0-6"	10/24/2013	7.50	1,440	-	0.04	5.95	-
West Ref-05 0-6"	10/24/2013	7.70	952	-	0.02	6.61	-
West Ref-06 0-6"	10/24/2013	7.80	976	-	0.03	6.68	-
West Ref-07 0-6"	10/24/2013	7.70	900	-	0.03	6.68	-
West Ref-08 0-6"	10/24/2013	7.70	742	-	0.03	6.90	-
Subsurface							
West Ref 18-24"	4/20/2010	7.45	456	0.70	<0.01	7.23	11
West Ref-01 6-12"	10/13/2010	8.36	651	1.33	<0.01	7.66	11
West Ref-02 12-18"	10/13/2010	8.43	654	1.19	<0.01	7.73	11
West Ref-01 12-18"	10/4/2011	7.90	316	1.30	<0.01	8.07	11
West Ref-02 18-24"	10/4/2011	7.90	267	1.80	<0.01	8.26	16
West Ref-01 18-24"	4/26/2012	7.70	259	1.00	0.04	8.11	26
West Ref-02 18-24"	4/26/2012	7.60	220	1.20	0.01	8.21	21
West Ref-01 18-24"	10/8/2012	7.90	283	0.90	<0.01	8.19	8
West Ref-02 18-24"	10/8/2012	7.90	260	0.80	<0.01	8.29	8
West Ref-01 18-24"	4/23/2013	7.80	378	0.30	<0.01	7.77	9
West Ref-02 18-24"	4/23/2013	7.60	432	0.50	0.02	7.43	9
West Ref-01 12-18"	10/24/2013	7.70	397	1.10	0.02	7.62	11
West Ref-02 12-18"	10/24/2013	7.90	726	1.50	0.02	7.11	20

Appendix C-3
Surface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
Organic Matter Amendment Composition [4]							
Pen # 1	4/10/2008	7.98	257	20	0.11	8.38	24.5
Pen # 2	4/10/2008	8.72	248	18	0.01	9.11	33.3

Notes:

s.u. = standard units

mg/kg = milligrams per kilogram

TOC = Total Organic Carbon

SPLP = Synthetic Precipitation Leaching Procedure

mg/L = milligrams per liter

nd = non-detect. Detection limit indicated in parentheses.

1 - All pH and total copper sample concentrations measured between 2006 and 2010 are adjusted to sieved (< 2mm) concentrations using a regression in text. Data from 2011 to 2013 were sieved to < 2mm in laboratory before analysis. The 10 field pH samples in May 2008 are shown in Appendix A-1.

2 - All SPLP Cu analyzed using modified 5:1 ratio with $CaCl_2$, except October 2011 to April 2013 used standard 1:20 ratio with DI water.

3- 2006 sample in East plot sampled near but not in amendment plot due to heavy truck traffic preventing access.

4 - In addition to copper, a suite of metals was tested on the organic matter in the field using XRF and all were below the detection limit.

Fall 2011 sample analysis was by ACZ Labs while all previous sample analysis was by ACZ.

Appendix C-4
Subsurface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
Northeast Amendment Plot - Lime and Organic Matter Only (2006 results were sampled in a slightly different location than December 2008 to 2012)							
ARC 001 Northeast 18-20"	5/7/2008	7.62	848	0.77	0.02	6.67	13.4
ARC 002 Northeast 18-24"	5/7/2008	7.54	1,123	1.00	0.03	6.27	19.8
Northeast-003 18-20"	12/10/2008	6.37	450	0.70	0.01	6.24	38.2
Northeast-004 18-20"	12/10/2008	6.87	1,660	1.10	0.06	5.20	16.4
Northeast-01 13-19"	10/6/2009	6.79	1,722	1.90	0.68	5.09	11.1
Northeast-02 18"	10/7/2009	6.31	1,898	1.43	0.15	4.52	7.8
Northeast-03 8-16"	10/7/2009	7.08	856	1.16	0.14	6.16	8.3
Northeast-01 18-24"	4/21/2010	6.19	465	0.65	0.02	6.04	9.3
Northeast-02 18-24"	4/21/2010	7.41	439	0.90	0.02	7.24	8.6
Northeast-03 18-24"	4/21/2010	5.95	784	1.05	0.05	5.21	11.3
Northeast-01 12-18"	10/14/2010	7.08	303	0.57	<0.01	7.35	11.4
Northeast-02 6-12"	10/14/2010	6.84	345	0.62	<0.01	6.98	9.3
Northeast-01 12-18"	5/3/2011	7.29	57	0.81	<0.01	9.48	12.0
Northeast-02 18-24"	5/3/2011	7.01	822	1.12	<0.01	6.14	13.9
Northeast-03 18-24"	5/3/2011	6.80	457	1.02	0.01	6.62	13.0
Northeast-01 18-24"	10/7/2011	7.20	105	0.70	0.05	8.68	10.0
Northeast-02 18-24"	10/7/2011	7.30	121	1.10	0.01	8.61	9.2
Northeast-03 18-24"	10/7/2011	7.10	26	0.80	<0.01	10.20	8.2
Northeast-01 12-18"	4/25/2012	6.30	82	1.30	0.03	8.13	13.0
Northeast-02 18-24"	4/25/2012	7.10	150	1.00	0.03	8.18	11.3
Northeast-03 18-24"	4/25/2012	7.30	124	0.90	0.04	8.59	13.9
Northeast-01 18-24"	10/9/2012	6.00	2,190	1.40	0.03	4.07	9.8
Northeast-02 18-24"	10/9/2012	7.50	256	0.90	<0.01	7.94	9.7
Northeast-03 18-24"	10/9/2012	7.80	312	0.70	0.01	7.99	8.7
Northeast-01 6-12"	4/25/2013	6.50	817	1.20	0.05	5.67	9.4
Northeast-02 18/24"	4/25/2013	7.50	362	0.90	0.03	7.54	13.2
Northeast-03 6-12"	4/25/2013	6.60	110	1.00	0.02	8.07	8.4
Northeast-01 15-21"	10/24/2013	6.80	1,090	1.50	0.23	5.62	15.8
Northeast-02 15-21"	10/24/2013	6.90	2,530	1.50	0.20	4.75	16.3
Northeast-03 6-12"	10/24/2013	5.50	1,910	1.40	0.86	3.77	14.0

Appendix C-4
Subsurface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
Northeast Reference Plot							
NE Ref 18-24"	4/21/2010	7.46	275	0.43	0.01	7.82	11.1
NE Ref-01 18-22"	10/14/2010	7.06	428	0.63	<0.01	6.94	10.2
NE Ref-02 18-24"	10/14/2010	7.30	536	0.76	0.01	6.90	11.8
NE Ref-01 12-18"	5/3/2011	5.92	752	1.52	0.01	5.23	10.8
NE Ref-02 12-18"	5/3/2011	6.44	754	0.88	0.02	5.71	10.2
NE Ref-01 18-24"	10/7/2011	7.50	136	1.00	0.02	8.67	13.3
NE Ref-02 12-18"	10/7/2011	6.90	168	1.40	0.01	7.86	16.5
NE Ref-01 12-18"	4/25/2012	6.40	136	1.10	0.03	7.64	15.0
NE Ref-02 6-12"	4/25/2012	5.80	195	1.50	0.04	6.67	11.4
NE Ref-01 18-24"	10/9/2012	6.70	146	1.20	0.01	7.84	14.8
NE Ref-02 12-18"	10/9/2012	7.70	167	0.70	<0.01	8.62	9.9
NE Ref-01 6-12"	4/25/2013	6.80	211	0.80	0.02	7.51	10.8
NE Ref-02 18-24"	4/25/2013	6.20	749	1.10	0.02	5.49	14.2
NE Ref-01 12-18"	10/23/2013	6.60	777	0.80	0.08	5.82	8.6
NE Ref-02 12-18"	10/23/2013	4.90	776	1.00	2.90	4.24	10.3
East Amendment Plot - Lime and Organic Matter with Tilling							
ARC 001 East 18-24"	5/7/2008	7.95	756	0.65	0.02	7.11	28.2
ARC 002 East 18-24"	5/7/2008	8.10	493	0.50	<0.01	7.74	20.5
East-003 18-20"	12/10/2008	7.14	393	0.66	0.03	7.11	13.8
East-004 18-20"	12/10/2008	7.25	288	1.00	0.02	7.57	22.4
East-01 12-18"	10/6/2009	7.62	340	1.43	0.04	7.73	8.4
East-02 9-15"	10/6/2009	7.19	702	1.08	0.05	6.49	7.7
East-03 10-18"	10/6/2009	7.28	377	1.01	0.06	7.28	10.5
East-01 15-21"	4/21/2010	7.29	365	0.68	0.04	7.33	12.0
East-02 18-24"	4/21/2010	7.66	322	0.46	0.02	7.82	8.8
East-03 18-24"	4/21/2010	7.56	306	0.56	0.02	7.79	12.7
East-01 18-24"	10/14/2010	7.23	329	0.50	0.01	7.40	9.6
East-02 18-24"	10/14/2010	7.34	315	0.65	0.01	7.55	9.7
East-01 18-24"	5/3/2011	6.90	732	1.95	0.03	6.17	13.5
East-02 6-12"	5/3/2011	7.32	601	2.18	0.03	6.79	19.9
East-03 18-24"	5/3/2011	7.84	232	1.58	0.02	8.37	23.5
East-01 6-12"	10/6/2011	6.90	113	1.30	<0.01	8.32	11.9
East-02 6-12"	10/6/2011	5.80	868	1.10	0.06	4.95	10.7
East-03 6-12"	10/6/2011	5.20	630	1.10	0.06	4.76	12.7
East-01 12-18"	4/24/2012	7.70	78	1.10	0.03	9.49	12.2
East-02 18-24"	4/24/2012	7.50	363	1.60	0.13	7.54	11.3
East-03 18-24"	4/24/2012	7.40	574	2.80	0.37	6.92	10.0
East-01 18-24"	10/10/2012	7.60	77	0.70	<0.01	9.41	9.3
East-02 12-18"	10/10/2012	7.50	43	0.70	<0.01	9.99	8.1
East-03 18-24"	10/10/2012	7.10	142	0.70	0.07	8.24	11.4
East-01 18-24"	4/24/2013	7.40	180	0.60	0.04	8.25	8.7
East-02 6-12"	4/24/2013	7.40	86	0.90	0.03	9.10	7.1

Appendix C-4
Subsurface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
East-03 6-12"	4/24/2013	6.70	233	0.70	0.02	7.30	7.6
East-01 15-21"	10/25/2013	7.40	106	0.80	0.02	8.86	12.0
East-02 18-24"	10/25/2013	7.50	161	0.60	0.08	8.47	10.0
East-03 10-16"	10/25/2013	6.70	566	0.80	0.03	6.28	9.2
East Reference Plot							
East Ref-01 18-22"	10/14/2010	7.38	266	0.85	<0.01	7.78	12.3
East Ref-02 12-18"	10/14/2010	7.39	519	0.74	<0.01	7.02	13.4
East Ref-01 6-12"	5/3/2011	5.52	1,270	1.48	0.04	4.25	13.9
East Ref-02 6-12"	5/3/2011	4.82	953	0.92	1.33	3.93	30.3
East Ref-01 6-12"	10/6/2011	6.80	116	0.80	<0.01	8.20	10.9
East Ref-02 6-12"	10/6/2011	4.50	964	0.90	0.34	3.62	10.3
East Ref-01 6-12"	4/24/2012	7.60	141	1.10	0.13	8.72	11.6
East Ref-02 6-12"	4/24/2012	6.70	86	0.80	0.05	8.45	9.5
East Ref-01 6-12"	10/10/2012	7.40	58	0.70	<0.01	9.55	8.8
East Ref-02 6-12"	10/10/2012	7.60	239	0.70	<0.01	8.11	10.7
East Ref-01 6-12"	4/24/2013	7.50	72	0.70	<0.01	9.40	6.7
East Ref-02 6-12"	4/24/2013	6.90	455	0.90	0.02	6.72	8.7
East Ref-01 6-12"	10/25/2013	6.20	737	0.70	0.05	5.51	7.3
East Ref-02 12-18"	10/25/2013	6.20	677	0.70	0.06	5.61	7.6
North Amendment Plot - Lime and Organic Matter with Tilling (2006 and spring 2008 results were sampled in a slightly different location than December 2008 to 2012)							
ARC 001 NORTH 18-24"	5/8/2008	8.10	713	0.72	0.01	7.31	20.1
ARC 002 NORTH 18-24"	5/8/2008	7.91	682	0.70	<0.01	7.19	16.9
North-003 16-18"	12/10/2008	6.79	1,350	1.60	0.11	5.37	20.9
North-004 18-20"	12/10/2008	6.77	801	1.10	0.09	5.94	20.6
North-01 12-20"	10/6/2009	6.60	533	0.61	0.05	6.26	8.9
North-02 21"	10/6/2009	6.73	743	1.32	0.07	6.00	11.4
North-03 11-19"	10/6/2009	6.98	1,240	0.98	0.13	5.64	7.7
North-01 18-24"	4/20/2010	7.56	500	0.51	<0.01	7.23	15.1
North-02 18-24"	4/20/2010	7.87	311	0.52	<0.01	8.06	10.4
North-03 11-19"	4/20/2010	7.83	351	0.65	0.01	7.89	10.9
North-01 18-24"	10/13/2010	7.28	318	0.51	0.01	7.48	13.7
North-02 18-24"	10/13/2010	7.49	329	0.40	0.01	7.64	10.8
North-01 18-24"	5/2/2011	7.25	236	0.61	<0.01	7.80	13.8
North-02 12-18"	5/2/2011	6.88	123	0.72	<0.01	8.20	11.2
North-03 18-24"	5/2/2011	7.27	143	0.42	<0.1	8.39	9.8
North-01 18-24"	10/5/2011	7.40	640	0.80	0.05	6.79	7.6
North-02 18-24"	10/5/2011	7.30	91	0.70	0.03	8.94	17.5
North-03 18-24"	10/5/2011	7.20	59	1.00	0.02	9.35	15.2
North-01 18-24"	4/25/2012	7.20	67	0.90	<0.01	9.20	12.3
North-02 18-24"	4/25/2012	7.20	70	1.10	<0.01	9.15	17.4
North-03 18-24"	4/25/2012	7.50	98	0.80	<0.01	9.04	13.0
North-01 18-24"	10/9/2012	7.30	423	1.30	0.02	7.17	10.9

Appendix C-4
Subsurface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
North-02 18-24"	10/9/2012	6.90	263	1.30	0.02	7.35	9.9
North-03 18-24"	10/9/2012	7.20	122	1.00	<0.01	8.51	9.4
North-01 12-18"	4/24/2013	7.00	161	1.20	0.02	8.01	11.6
North-02 12-18"	4/24/2013	7.00	219	0.90	0.03	7.65	8.8
North-03 12-18"	4/24/2013	6.80	477	1.10	0.09	6.57	8.0
North-01 12-18"	10/24/2013	7.20	293	0.90	0.02	7.50	10.6
North-02 15-21"	10/24/2013	7.60	308	0.70	0.03	7.82	11.1
North-03 18-24"	10/24/2013	7.40	363	0.90	0.05	7.44	33.2
North Reference Plot							
North Ref 18-24"	4/20/2010	8.31	331	0.36	0.01	8.39	9.3
North Ref-01 18-24"	10/13/2010	7.42	311	0.32	0.01	7.64	7.6
North Ref-02 18-24"	10/13/2010	7.23	277	0.44	<0.01	7.59	16.6
North Ref-01 18-24"	5/2/2011	7.98	85	0.40	<0.01	9.66	10.3
North Ref-02 18-24"	5/2/2011	7.55	234	0.37	<0.01	8.09	7.0
North Ref-01 18-24"	10/5/2011	7.60	128	0.50	<0.01	8.83	10.4
North Ref-02 18-24"	10/5/2011	7.50	98	0.90	0.02	9.04	9.8
North Ref-01 18-24"	4/25/2012	7.30	33	0.70	0.06	10.11	17.1
North Ref-02 12-18"	4/25/2012	7.40	69	0.50	0.03	9.35	10.8
North Ref-01 18-24"	10/9/2012	7.10	231	0.60	0.02	7.68	17.6
North Ref-02 18-24"	10/9/2012	7.30	109	0.60	<0.01	8.73	11.5
North Ref-01 6-12"	4/24/2013	6.90	234	0.80	0.02	7.48	7.2
North Ref-02 18-24"	4/24/2013	7.60	34	0.40	<0.01	10.35	8.5
North Ref-01 18-24"	10/25/2013	7.90	141	0.60	0.01	9.00	11.7
North Ref-02 12-18"	10/25/2013	7.40	180	0.50	0.01	8.25	5.5
West Amendment Plot (control)							
West-003 16-18"	12/10/2008	7.34	624	1.10	<0.01	6.76	19.3
West-004 16-19"	12/10/2008	7.46	515	0.90	<0.01	7.10	21.4
West-01 10-15"	10/6/2009	7.71	586	1.17	0.01	7.18	10.5
West-02 18-20"	10/6/2009	7.54	437	0.86	<0.01	7.36	9.4
West-03 18-24"	10/6/2009	7.51	1,109	0.96	0.02	6.26	12.2
West-01 18-24"	4/20/2010	7.77	460	0.59	<0.01	7.52	34.0
West-02 18-24"	4/20/2010	8.11	470	0.58	<0.01	7.80	16.1
West-03 18-24"	4/20/2010	8.07	481	0.64	<0.01	7.74	14.0
West-01 11-17"	10/13/2010	8.05	679	1.01	<0.01	7.32	10.4
West-02 6-12"	10/13/2010	8.37	606	1.26	0.01	7.75	14.3
West-01 18-24"	5/3/2011	7.85	314	0.88	<0.01	8.03	15.8
West-02 12-18"	5/3/2011	7.85	637	1.14	<0.01	7.22	8.6
West-03 18-24"	5/3/2011	7.73	319	1.04	<0.01	7.90	11.3
West-01 6-12"	10/4/2011	7.80	249	2.20	0.01	8.25	9.7
West-02 12-18"	10/4/2011	7.70	264	1.70	0.03	8.09	11.9
West-03 12-18"	10/4/2011	7.70	253	1.80	0.02	8.14	7.9
West-01 18-24"	4/26/2012	7.90	208	0.80	<0.01	8.55	13.1
West-02 6-12"	4/26/2012	7.80	133	1.40	<0.01	8.97	14.1

Appendix C-4
Subsurface Soil Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		pH[1] (s.u.)	Copper[1] (mg/kg)	TOC (%)	SPLP Copper (mg/L)[2]	pCu	Carbon: Nitrogen Ratio (X:1)
West-03 6-12"	4/26/2012	7.90	187	1.60	<0.01	8.67	13.6
West-01 12-18"	10/8/2012	7.80	272	0.70	<0.01	8.15	9.3
West-02 18-24"	10/8/2012	7.70	244	1.00	<0.01	8.18	14.5
West-03 12-18"	10/8/2012	7.70	299	0.90	<0.01	7.95	8.1
West-01 18-24"	4/23/2013	7.50	259	0.30	<0.01	7.92	7.5
West-02 6-12"	4/23/2013	7.60	222	1.20	<0.01	8.19	8.4
West-03 18-24"	4/23/2013	7.50	371	0.40	<0.01	7.51	12.0
West-01 18-24"	10/24/2013	7.60	99	0.40	<0.01	9.12	6.0
West-02 18-24"	10/24/2013	7.80	435	1.00	<0.01	7.61	8.8
West-03 6-12"	10/24/2013	7.80	285	1.50	<0.01	8.09	10.2
West Reference Plot (since amendment plot was not treated, West amendment and West reference plots are replicates)							
West Ref 18-24"	4/20/2010	7.45	456	0.70	<0.01	7.23	11.5
West Ref-01 6-12"	10/13/2010	8.36	651	1.33	<0.01	7.66	11.4
West Ref-02 12-18"	10/13/2010	8.43	654	1.19	<0.01	7.73	10.7
West Ref-01 12-18"	10/4/2011	7.90	316	1.30	<0.01	8.07	10.9
West Ref-02 18-24"	10/4/2011	7.90	267	1.80	<0.01	8.26	15.6
West Ref-01 18-24"	4/26/2012	7.70	259	1.00	0.04	8.11	26.3
West Ref-02 18-24"	4/26/2012	7.60	220	1.20	0.01	8.21	21.0
West Ref-01 18-24"	10/8/2012	7.90	283	0.90	<0.01	8.19	7.7
West Ref-02 18-24"	10/8/2012	7.90	260	0.80	<0.01	8.29	7.7
West Ref-01 18-24"	4/23/2013	7.80	378	0.30	<0.01	7.77	9.1
West Ref-02 18-24"	4/23/2013	7.60	432	0.50	0.02	7.43	8.6
West Ref-01 12-18"	10/24/2013	7.70	397	1.10	0.02	7.62	10.8
West Ref-02 12-18"	10/24/2013	7.90	726	1.50	0.02	7.11	19.7

Notes:

s.u. - standard units

mg/kg - milligrams per kilogram

TOC - Total Organic Carbon

SPLP - Synthetic Precipitation Leaching Procedure

mg/L - milligrams per liter

nd - non-detect. Detection limit indicated in parentheses.

1 - All pH and total copper sample concentrations measured between 2008 and 2010 shown here adjusted to sieved(< 2 mm) concentrations using a regression in text. Data from 2011 to 2013 were sieved to < 2mm in laboratory before analysis.

2 - All SPLP Cu analyzed using modified 5:1 ratio with $CaCl_2$, except October 2011 to April 2013 used standard 1:20 ratio with DI water.

Fall 2011 sample analysis was by ACZ Labs while all previous sample analysis was by ACZ. No subsurface samples taken in 2006.

Appendix C-5
Mean Subsurface Soil Analytical Values on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	Average pH[1] (s.u.)	Average Copper[1] (mg/kg)	TOC (%)	Average SPLP Copper (mg/L)[2]	pCu	Average Carbon : Nitrogen Ratio (X:1)
Northeast Amendment Plot - Lime and Organic Matter Only (2006 results were sampled in a slightly different location than December 2008 to 2012)							
May-08	2	7.58	986	0.89	0.03	6.47	16.6
December-08	2	6.62	1055	0.90	0.04	5.72	27.3
October-09	3	6.72	1492	1.50	0.32	5.26	9.1
April-10	3	6.52	563	0.87	0.03	6.16	9.7
October-10	2	6.96	324	0.60	<0.01	7.17	10.3
May-11	3	7.03	93	0.98	0.01	9.00	13.0
October-11	3	7.20	84	0.87	0.03	9.16	9.1
April-12	3	6.90	119	1.07	0.03	8.30	12.7
October-12	3	7.10	919	1.00	0.02	6.67	9.4
April-13	3	6.87	430	1.03	0.03	7.10	10.3
October-13	3	6.40	1843	1.47	0.18	4.71	15.3
Northeast Reference Plot							
April-10	1	7.46	275	0.43	0.01	7.82	11.1
October-10	2	7.18	482	0.70	0.01	6.92	11.0
May-11	2	6.28	295	1.20	0.01	6.92	10.5
October-11	2	7.20	152	1.20	0.02	8.26	14.9
April-12	2	6.10	166	1.30	0.04	7.16	13.2
October-12	2	7.20	157	0.95	0.01	8.23	12.4
April-13	2	6.50	480	0.95	0.02	6.50	12.5
October-13	2	5.75	777	0.90	1.49	5.03	9.4
East Amendment Plot - Lime and Organic Matter with Tilling							
May-08	2	8.02	625	0.58	0.02	7.42	24.4
December-08	2	7.19	341	0.83	0.03	7.34	18.1
October-09	3	7.36	473	1.17	0.05	7.17	8.9
April-10	3	7.50	331	0.57	0.03	7.65	11.2
October-10	2	7.28	322	0.58	0.01	7.47	9.6
May-11	3	7.36	371	1.90	0.03	7.85	19.0
October-11	3	5.97	537	1.17	0.06	6.01	11.7
April-12	3	7.53	338	1.83	0.18	7.98	11.2
October-12	3	7.40	87	0.70	0.07	9.22	9.6
April-13	3	7.17	166	0.73	0.03	8.22	7.8
October-13	3	7.20	278	0.73	0.12	7.87	10.4

Appendix C-5
Mean Subsurface Soil Analytical Values on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	Average pH[1] (s.u.)	Average Copper[1] (mg/kg)	TOC (%)	Average SPLP Copper (mg/L)[2]	pCu	Average Carbon : Nitrogen Ratio (X:1)
East (B) Reference Plot							
October-10	2	7.38	392	0.80	<0.01	7.40	12.9
May-11	2	6.31	905	1.20	0.68	5.39	22.1
October-11	2	5.65	540	0.85	0.34	5.91	10.6
April-12	2	7.33	131	0.83	0.09	8.71	10.2
October-12	2	7.50	149	0.70	<0.01	8.83	9.8
April-13	2	7.20	264	0.80	<0.02	8.06	7.7
October-13	2	6.20	707	0.70	0.06	5.56	7.4
North Amendment Plot - Lime and Organic Matter with Tilling (2006 & spring 2008 results sampled in a slightly different location than December 2008 to 2012)							
May-08	2	8.00	697	0.71	0.01	7.25	18.5
December-08	2	6.78	1075	1.35	0.10	5.66	20.8
October-09	3	6.77	839	0.97	0.08	5.97	9.4
April-10	3	7.76	387	0.56	0.01	7.72	12.1
October-10	2	7.38	324	0.46	0.01	7.56	12.3
May-11	3	6.86	65	0.58	<0.01	8.92	11.6
October-11	3	7.30	263	0.83	0.03	8.36	13.4
April-12	3	7.30	78	0.93	<0.01	9.13	14.2
October-12	3	7.13	269	1.20	0.02	7.68	10.1
April-13	3	6.93	286	1.07	0.05	7.41	9.4
October-13	3	7.40	321	0.83	0.03	7.59	18.3
North Reference Plot							
April-10	1	8.31	331	0.36	0.01	8.39	9.3
October-10	2	7.33	294	0.38	0.01	7.62	12.1
May-11	2	7.33	79	0.38	<0.01	9.17	8.7
October-11	2	7.55	113	0.70	0.02	8.94	10.1
April-12	2	7.35	51	0.60	0.05	9.73	14.0
October-12	2	7.20	170	0.60	0.02	8.21	14.6
April-13	2	7.25	134	0.60	<0.02	8.92	7.8
October-13	2	7.65	161	0.55	0.01	8.62	8.6
West Amendment Plot - Control							
December-08	2	7.40	570	1.00	<0.01	6.93	20.4
October-09	3	7.59	711	1.00	0.01	6.93	10.7
April-10	3	7.98	470	0.60	<0.01	7.69	21.4
October-10	2	8.21	643	1.14	0.01	7.54	12.4
May-11	3	8.01	261	1.02	<0.01	8.40	11.9
October-11	3	7.73	255	1.90	0.02	8.16	9.8
April-12	3	7.87	176	1.27	<0.01	8.73	13.6
October-12	3	7.73	272	0.87	<0.01	8.09	10.6
April-13	3	7.53	284	0.63	<0.01	7.88	9.3
October-13	3	7.73	273	0.97	<0.01	8.27	8.3

Appendix C-5
Mean Subsurface Soil Analytical Values on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date (month-year)	Number of Samples	Average pH[1] (s.u.)	Average Copper[1] (mg/kg)	TOC (%)	Average SPLP Copper (mg/L)[2]	pCu	Average Carbon : Nitrogen Ratio (X:1)
West Reference Plot							
April-10	1	7.45	456	0.70	<0.01	7.23	11.5
October-10	2	8.39	652	1.26	<0.01	7.69	11.0
October-11	2	7.90	292	1.55	<0.01	8.16	13.3
April-12	2	7.65	240	1.10	0.03	8.16	23.6
October-12	2	7.90	272	0.85	<0.01	8.24	7.7
April-13	2	7.70	405	0.40	0.02	7.60	8.8
October-13	2	7.80	562	1.30	0.02	7.37	15.2

Notes:

Surface samples collected in top 6 inches of soil profile. Subsurface samples collected in 6 inches above calliche layer (or if no caliche layer shallower than 24", then 18-24")

s.u. - standard units

mg/kg - milligrams per kilogram

TOC - Total Organic Carbon

SPLP - Synthetic Precipitation Leaching Procedure

mg/L - milligrams per liter

1 - All pH and total copper sample concentrations measured between 2008 and 2010 are shown adjusted to sieved (<2 mm) concentrations using a regression in text. 2011 to 2013 data were sieved to < 2 mm in laboratory.

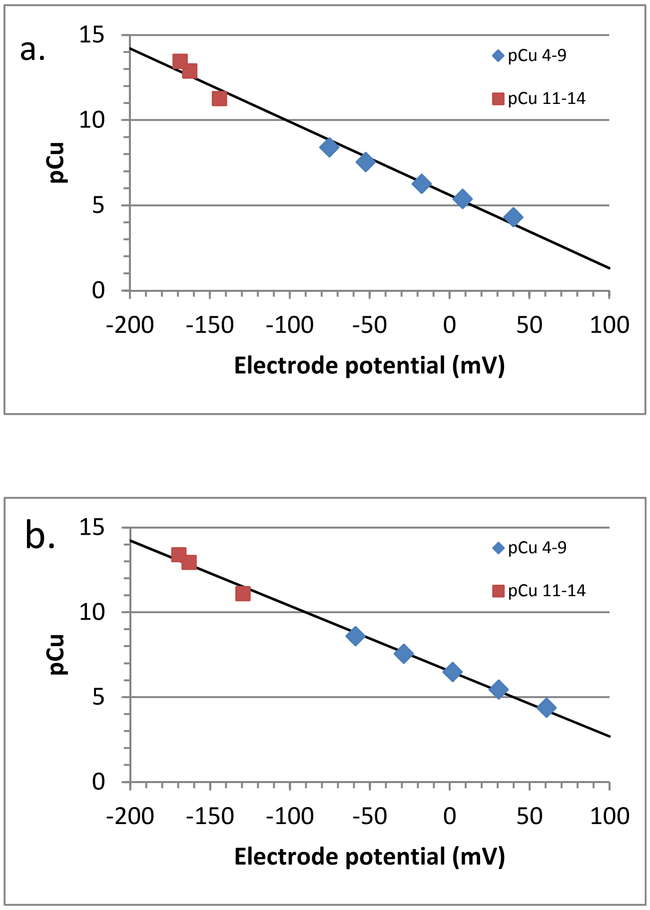
2 - All SPLP Cu analyzed using modified 5:1 ratio with $CaCl_2$, except October 2011 to April 2013 used standard 1:20 ratio with DI water.

No subsurface samples taken in 2006.

Appendix C-6: Measurement of pCu using Electrode Potentials

Energy labs measured pCu following protocols in Sauve et al. 1995. Specifically,

1. Measured pCu was calculated based on electrode potentials of soil solution.
2. The electrode was calibrated in $CaCl_2$ solutions of various known cupric ion activity solutions to develop a calibration curve between electrode potential in millivolts and cupric ion activity.
3. The calibration curve was used to estimate pCu from measured electrode potential.
4. Two curves were used on two different days for different batches of soil for the amendment study and the two regressions lines used are shown below in Figures A-6-1a and A-6-1b.



y = -0.043002x + 5.606284

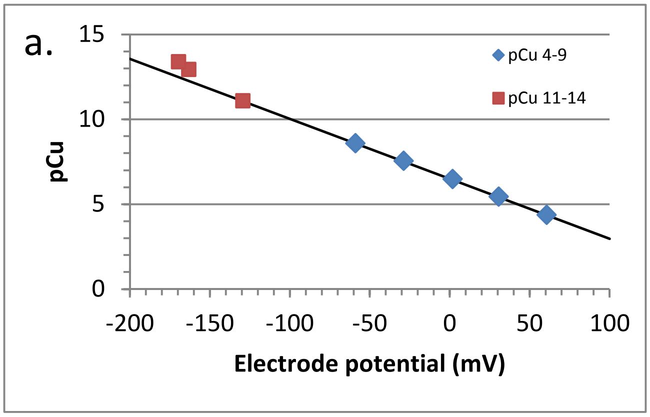
R^2 = 0.986 (all data)

y = -0.038467x + 6.521146

R^2 = 0.995 (all data)

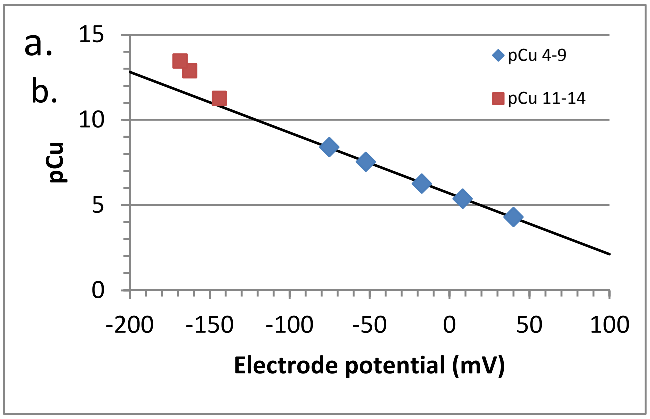
Figure A-6-1. Energy Laboratories pCu calibration data on (a) December 19, 2013 and (b) December 20, 2013.

Although Energy Laboratories used the same recipe for their Cu^{2+} calibration solution as Sauvé et al. (1995) used[1], the calibration data generated by Energy Laboratories were only linear between pCu values of approximately 4 and 9 (Figures A-6-2a and A-6-2b). Non-linearity also was observed in the calibration curves used in the sitewide ERA (Newfields 2005). At pCu values greater than 9, the plots of pCu *versus* electrode potential (as mV) curved upward from a straight line (Figures A-6-2a and A-6-2b). Alternatively, it is possible to fit a non-linear calibration curve, but the overall implications of a non-linear curve have yet to be evaluated and will be discussed in greater detail in the pending Phytotoxicity Report. As a compromise between fitting a line between 4 and 9 and a non-linear curve, Energy Laboratories used a linear calibration curve fit to all the calibration data (Figure A-6-1) to estimate pCu from measured electrode potential.



$y = -0.035318x + 6.502969$

$R^2 > 0.999$ (pCu 4-9 only)



$y = -0.035620x + 5.679377$

$R^2 = 0.999$ (pCu 4-9 only)

Figure A-6-2. Energy Laboratories pCu calibration data on (a) December 19, 2013 and (b) December 20, 2013.

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[1] Calibration solution containing $Cu(NO_3)_2$, iminodiacetic acid, $KHC_8H_4O_4$, $CaCl_2$, and NaOH, with pH adjusted using HNO_3; see Electrode Calibration section on page 374 in Sauvé et al. 1995.

Appendix C-7
ABA of Surface and Subsurface Soil Samples - Amendment Plots (Dec 2008) and Reference Plots (2010 through 2013)

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot/Sample ID	Date	Total Sulfur (%)	Pyritic/ Sulfide Sulfur (%)	Sulfate Sulfur (%)	Organic/ Insoluble Sulfur (%)	AGP (t $CaCO_3$/kt) (calculated)[1]	ANP (t $CaCO_3$/kt)	NNP (t $CaCO_3$/kt) (calculated)	NPR (ANP/AGP) (calculated)
Northeast Amendment Plot - Lime and Organic Matter Only									
Northeast-003 0-6"	Dec-08	0.10	0.04	0.06	<0.01	1.3	2.5	1.3	2.0
Northeast-004 0-6"		0.03	0.02	0.01	<0.01	0.63	2.5	1.9	4.0
Average		0.07	0.03	0.04	<0.01			1.6	3.0
Northeast-003 18-20"		0.01	<0.01	0.01	<0.01	<0.30	5.0	4.7	16.7
Northeast-004 18-20"		<0.01	<0.01	<0.01	<0.01	<0.30	36.3	36.0	121.0
Average		0.01	<0.01	0.01	<0.01			20.4	68.8
East Amendment Plot - Lime and Organic Matter with Tilling									
East-003 0-6"	Dec-08	0.10	0.03	0.07	<0.01	0.94	2.5	1.6	2.7
East-004 0-6"		<0.01	<0.01	<0.01	<0.01	<0.30	50.1	49.8	167.0
Average		0.06	<0.01	0.04	<0.01			25.7	84.8
East-003 18-20"		0.05	<0.01	0.05	<0.01	<0.30	148.0	147.7	493.3
East-004 18-20"		<0.01	<0.01	<0.01	<0.01	<0.30	260.0	259.7	866.7
Average		0.03	<0.01	0.03	<0.01			203.7	680.0
North Amendment Plot - Lime and Organic Matter with Tilling									
North-003 0-6"	Dec-08	0.05	0.03	0.01	<0.01	0.94	22.5	21.6	24.0
North-004 0-6"		0.01	<0.01	0.01	<0.01	<0.30	13.8	13.5	46.0
North-005 0-6"		0.01	<0.01	0.01	<0.01	<0.30	16.3	16.0	54.3
Average		0.02	<0.01	0.01	<0.01			14.8	50.2
North-003 16-18"		0.02	0.01	<0.01	<0.01	0.30	10.0	9.7	32.0
North-004 18-20"		<0.01	<0.01	<0.01	<0.01	<0.30	10.0	9.7	33.3
Average		0.02	0.01	<0.01	<0.01			9.7	32.7
West Amendment Plot (Control) - No Treatment									
West-003 0-6"	Dec-08	<0.01	<0.01	<0.01	<0.01	<0.30	8.5	8.2	28
West-004 0-6"		<0.01	<0.01	<0.01	<0.01	<0.30	6.0	5.7	20
Average		<0.01	<0.01	<0.01	<0.01			7	24
West-003 16-18"		<0.01	<0.01	<0.01	<0.01	<0.30	125	125	417
West-004 16-19"		<0.01	<0.01	<0.01	<0.01	<0.30	105	105	350
Average		<0.01	<0.01	<0.01	<0.01			115	383

Appendix C-7
ABA of Surface and Subsurface Soil Samples - Amendment Plots (Dec 2008) and Reference Plots (2010 through 2013)

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot/Sample ID	Date	Total Sulfur (%)	Pyritic/ Sulfide Sulfur (%)	Sulfate Sulfur (%)	Organic/ Insoluble Sulfur (%)	AGP (t CaCO$_3$/kt) (calculated)[1]	ANP (t CaCO$_3$/kt)	NNP (t CaCO$_3$/kt) (calculated)	NPR (ANP/AGP) (calculated)
Reference Plots - Surface Samples									
Reference #1 (West)	2010	0.03	<0.01	0.03	<0.01	<0.30	238	238	793
	2011	0.09	0.03	0.04	0.02	0.94	101	100	108
	2012	<0.01	0.03	<0.01	<0.01	0.94	61	60	65
	2013	<0.01	0.02	<0.01	0.02	0.63	166	165	266
Reference #2 (North)	2010	0.02	<0.01	0.02	<0.01	<0.30	3.6	3.3	12
	2011	0.02	<0.01	<0.01	0.05	<0.30	11	10.7	37
	2012	<0.01	<0.01	<0.01	<0.01	<0.30	6.0	5.7	20
	2013	<0.01	0.02	<0.01	<0.01	0.63	5.0	4.4	8.0
Reference #3 (Northeast)	2010	0.07	0.02	0.05	<0.01	0.63	7.6	7.0	12
	2011	0.16	0.07	0.07	0.02	2.2	13	10.8	5.9
	2012	0.06	0.03	0.03	<0.01	0.94	3.0	2.1	3.2
	2013	0.12	0.08	0.02	0.02	2.5	11	8.5	4.4
Reference #4 (East)	2010	0.14	0.03	0.11	<0.01	0.94	<0.30	-0.64	0.32
	2011	0.23	0.14	0.05	0.04	4.4	0.00	-4.4	0.00
	2012	0.10	0.06	0.04	<0.01	1.9	8.0	6.1	4.3
	2013	0.23	0.15	0.05	0.03	4.7	3.0	-1.7	0.64

Notes:

1 - AGP is calculated from pyritic/sulfide sulfur where S(%)*31.25 = AGP. AGP was calculated using the detection limit when pyritic/sulfide sulfur was less than 0.01%.

AGP = acid generation potential
ANP = acid neutralization potential
NNP = Net Neutralization Potential
NPR = Neutralization Potential Ratio

Appendix C-8
Calculated vs. Measured Average pCu per Depth Stratum in each Plot in October 2013

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot	Depth	Calculated pCu	Measured pCu
East Amendment	0-6"	6.14	7.13
	10-16"	6.28	8.60
	15-21"	8.86	8.41
	18-24"	8.47	8.68
East Reference	0-6"	4.86	4.72
	6-12"	5.51	7.04
	12-18"	5.61	7.06
North Amendment	0-6"	5.43	5.99
	12-18"	7.50	7.06
	15-21"	7.82	7.06
	18-24"	7.44	8.13
North Reference	0-6"	5.17	5.71
	12-18"	8.25	8.43
	18-24"	9.00	8.49
Northeast Amendment	0-6"	3.72	4.50
	6-12"	3.77	4.83
	15-21"	5.18	7.03
Northeast Reference	0-6"	3.62	3.62
	12-18"	5.03	6.10
West Amendment	0-6"	5.96	8.95
	6-12"	8.09	9.33
	18-24"	8.37	9.26
West Reference	0-6"	6.53	8.26
	12-18"	7.37	8.71

Note:

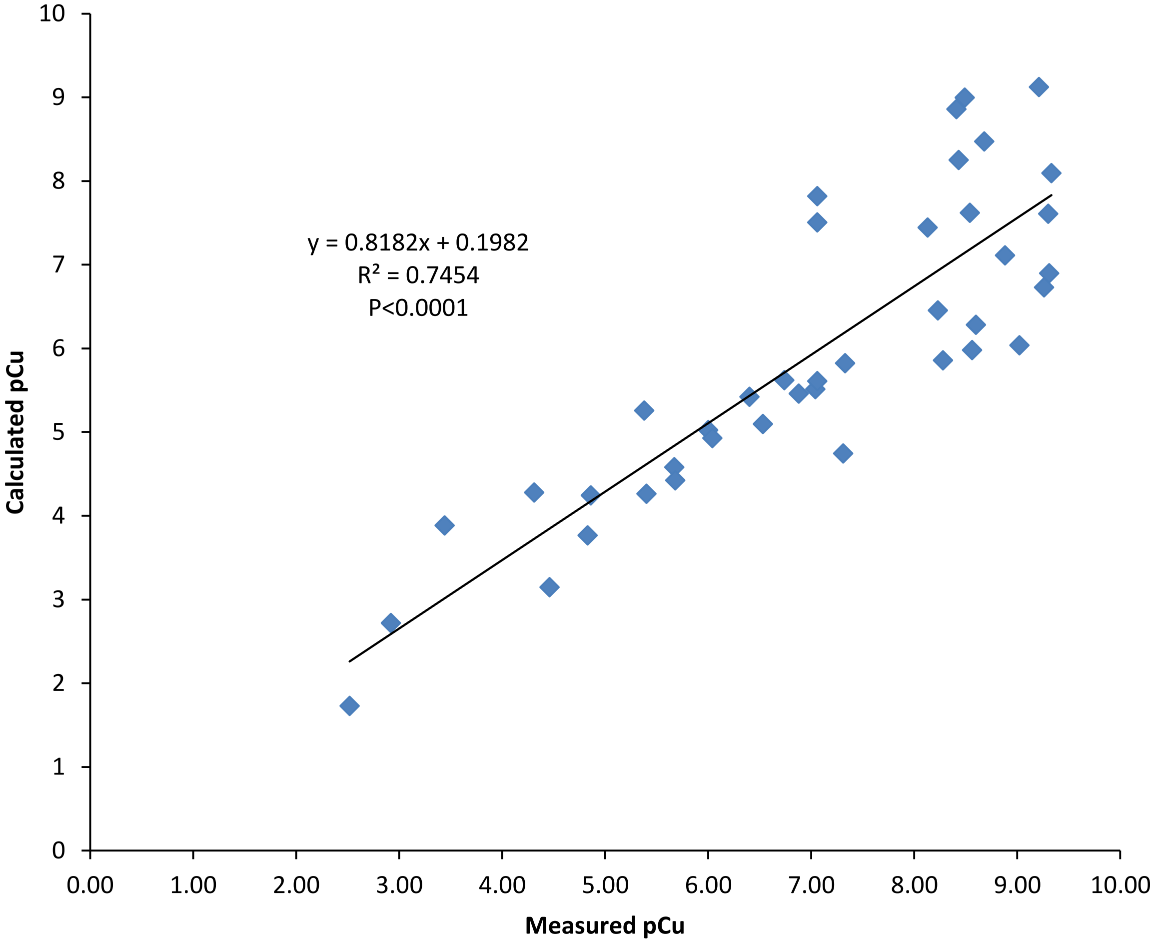
Number of samples averaged is same as for October 2013 in Table 5.

pCu = cupric iron activity

Appendix C-9
Calculated vs. Measured pCu per Depth Stratum Per Sample in each Plot in October 2013

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Plot	Sample ID	Depth	Measured pCu	Calculated pCu
West Amendment	W1 0-6	0-6"	9.02	6.04
	W2 0-6	0-6"	8.56	5.98
	W3 0-6	0-6"	9.26	6.73
	W1 (18-24)	18-24"	9.21	9.12
	W2 (18-24)	18-24"	9.30	7.61
	W3 (6-12)	6-12"	9.33	8.09
East Amendment	E1 0-6	0-6"	9.31	6.90
	E2 0-6	0-6"	6.40	5.42
	E3 0-6	0-6"	5.67	4.58
	E1 (15-21)	15-21"	8.41	8.86
	E2 (18-24)	18-24"	8.68	8.47
	E3 (10-16)	10-16"	8.60	6.28
North Amendment	N1 0-6	0-6"	6.88	5.46
	N2 0-6	0-6"	5.68	4.42
	N3 0-6	0-6"	5.40	4.26
	N1 12-18	12-18"	7.06	7.50
	N2 15-21	15-21"	7.06	7.82
	N3 18-24	18-24"	8.13	7.44
Northeast Amendment	NE1 0-6	0-6"	6.53	5.10
	NE2 0-6	0-6"	2.52	1.73
	NE3 0-6	0-6"	4.46	3.15
	NE1 (15-21)	15-21"	6.74	5.62
	NE2 (15-21)	15-21"	7.31	4.75
	NE3 (6-12)	6-12"	4.83	3.77
West Reference	WREF1 0-6	0-6"	8.23	6.45
	WREF2 0-6	0-6"	8.28	5.86
	WREF1 (12-18)	12-18"	8.54	7.62
	WREF2 (12-18)	12-18"	8.88	7.11
East Reference	EREF1 0-6	0-6"	6.00	5.02
	EREF2 0-6	0-6"	3.44	3.89
	EREF1 (6-12)	6-12"	7.04	5.51
	EREF2 (12-18)	12-18"	7.06	5.61
North Reference	NREF1 0-6	0-6"	5.38	5.26
	NREF2 0-6	0-6"	6.04	4.93
	NREF1 (18-24)	18-24"	8.49	9.00
	NREF2 (12-18)	12-18"	8.43	8.25
Northeast Reference	NEREF1 0-6	0-6"	4.31	4.28
	NEREF2 0-6	0-6"	2.92	2.72
	NEREF1 (12-18)	12-18"	7.33	5.82
	NEREF2 (12-18)	12-18"	4.86	4.24



Notes: Data are from individual samples in Appendix A-9.

FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Regression of calculated and measured pCu obtained in October 2013

ARCADIS

FIGURE
Appendix C-10

Appendix C-11
Mean Soil Nutrient Analytical Values on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date	Number of Samples	Soil Chemistry					
		Average Calcium (mg/kg)	Average Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
Northeast Amendment Plot - Lime and Organic Matter Only (2006 and spring 2008 results were sampled in a slightly different location than December 2008 to 2012)							
Surface							
7/12/2006	1	2870	1390	<10.00	319	<200	319
5/7/2008	2	4450	2645	0.78	716	3.5	719
12/10/2008	2	3700	2485	7.47	717	14.6	731
10/7/2009	3	4740	4070	6.43	1597	37.5	1634
4/21/2010	3	5167	4400	2.00	1020	11.6	1031
10/14/2010	2	4835	3730	1.14	659	5.5	664
5/3/2011	3	6497	4457	4.06	1453	9.6	1463
10/7/2011	3	5920	4443	1.73	1358	11.6	1369
4/25/2012	3	4313	3557	4.60	1417	20.6	1437
10/9/2012	3	5410	3483	6.70	1643	12.6	1656
4/25/2013	3	6847	4313	8.40	2340	24.13	2364
10/24/2013	3	6247	3810	14.00	1757	3.47	1760
Subsurface							
5/7/2008	2	8750	2945	0.32	537	2.2	539
12/10/2008	2	7340	2495	0.76	421	6.6	427
10/7/2009	3	8880	4197	3.15	1630	14.6	1645
4/21/2010	3	4810	3560	2.16	885	6.4	892
10/14/2010	2	9695	4115	0.50	583	1.5	584
5/3/2011	3	6113	4900	<0.30	750	3.1	753
10/7/2011	3	8097	4500	0.60	957	2.0	959
4/25/2012	3	8107	3730	<0.30	840	5.2	845
10/9/2012	3	8297	3860	1.00	1047	3.9	1051
4/25/2013	3	11087	3957	2.50	1047	3.60	1050
10/24/2013	3	6923	3670	2.13	957	2.34	959
Northeast Reference Plot							
Surface							
4/21/2010	1	6,380	3,730	1.99	368	4.1	372
10/14/2010	2	4870	3510	11.07	906	12.3	918
5/3/2011	2	4325	3490	8.23	1390	10.8	1401
10/7/2011	2	4730	4090	0.80	1300	12.2	1312
4/25/2012	3	3685	3715	1.50	1035	4.6	1040
10/9/2012	3	4770	3595	4.00	720	4.9	725
4/25/2013	3	5535	4000	6.55	2115	27.75	2143
10/23/2013	3	4190	3670	1.00	1086	3.55	1090
Subsurface							
4/21/2010	1	9960	3250	1.31	385	2.9	388
10/14/2010	2	14950	3090	0.61	628	2.6	631
5/3/2011	2	4360	3215	0.64	1133	3.4	1136
10/7/2011	2	25075	5035	<0.50	798	2.5	801
4/25/2012	2	6860	4540	0.30	1025	0.8	1026
10/9/2012	2	13085	4250	5.00	756	2.5	757
4/25/2013	2	11095	4545	0.40	755	3.10	758
10/23/2013	2	5120	3325	0.85	950	2.35	952
East (B) Amendment Plot - Lime and Organic Matter with Tilling							
Surface							
7/12/2006[1]	4	3596	2186	<10.00	719	<200	719
1/4/1900	39792	3763	2068				
5/7/2008	2	3870	2825	1.95	417	2.0	419
12/10/2008	2	9710	4520	3.58	658	78.6	736
10/6/2009	3	8730	4957	2.40	1740	36.9	1777
4/21/2010	3	5953	4657	2.63	1433	60.4	1494
10/14/2010	2	4260	4030	1.77	1180	20.9	1201
5/3/2011	3	7253	5873	4.51	2433	33.2	2467
10/6/2011	3	4213	3683	2.95	901	17.5	918
4/24/2012	3	5747	5360	1.75	1720	26.4	1746
10/10/2012	3	6657	4787	<3.00	1940	28.6	1969
4/24/2013	3	5063	5153	3.65	1567	45.33	1612
10/25/2013	3	6093	4323	2.00	2013	3.96	2017
Subsurface							
5/7/2008	2	60550	2915	0.32	235	2.2	237
12/10/2008	2	78300	4180	1.23	431	32.1	463
10/6/2009	3	15923	4997	0.85	1344	13.6	1357

Appendix C-11
Mean Soil Nutrient Analytical Values on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date	Number of Samples	Soil Chemistry					
		Average Calcium (mg/kg)	Average Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
4/21/2010	3	26500	4763	2.34	485	25.7	511
10/14/2010	2	85350	4695	0.55	557	39.7	596
5/3/2011	3	11933	4930	0.65	1064	6.5	1071
10/6/2011	3	4607	4497	0.60	992	5.9	998
4/24/2012	3	16223	4930	0.60	1657	49.1	1706
10/10/2012	3	18223	4433	2.75	737	7.9	745
4/24/2013	3	53923	6690	0.30	953	9.63	963
10/25/2013	3	68533	5363	0.55	710	5.36	715
East Reference Plot							
Surface							
4/21/2010	1	2410	3,040	2.10	777	4.2	781
10/14/2010	2	2210	2620	1.53	705	8.5	714
5/3/2011	2	2415	3240	0.64	691	3.3	694
10/6/2011	2	3130	4055	0.70	645	2.9	647
4/24/2012	8/3[1]	2735	2820	<0.30	590	4.7	595
10/10/2012	8/3[1]	4195	2965	<1.65	640	7.0	647
4/24/2013	8/3[1]	4655	3980	<0.30	830	5.55	836
10/25/2013	8/3[1]	2930	2825	<0.47	720	1.85	722
Subsurface							
10/14/2010	2	99500	4250	0.51	614	7.2	621
5/3/2011	2	4195	4195	<0.30	678.0	6.3	684
10/6/2011	2	4,630	5,375	<0.50	796	6	801
4/24/2012	2	12,008	4,623	<0.30	800	8	808
10/10/2012	2	9,560	4,840	0.30	715	8	723
4/24/2013	2	21940	5860	<0.30	1040	5.70	1046
10/25/2013	2	4780	3290	<0.30	940	3.65	944
North Amendment Plot - Lime and Organic Matter with Tilling (2006 & spring 2008 results sampled in a slightly different location than December 2008 to 2012)							
Surface							
7/12/2006	2	2375	2505	5.53	796	103	798
5/8/2008	2	8085	2575	5.41	571	9	579
12/10/2008	3	7560	3110	0.65	737	79	816
10/6/2009	3	7530	3443	2.20	1307	40	1347
4/20/2010	3	7883	2393	3.76	1165	26	1192
10/13/2010	2	8730	2775	0.70	571	6	577
5/2/2011	3	7367	3287	5.26	1160	26	1186
10/5/2011	3	9050	3313	1.43	1543	28	1571
4/25/2012	3	9317	3520	2.10	1467	15	1482
10/9/2012	3	8173	3593	4.00	2017	34.17	2051
4/24/2013	3	9343	3860	16.00	1267	18.10	1285
10/24/2013	3	7950	2933	2.00	953	2.61	956
Subsurface							
5/8/2008	2	12810	1975	<0.30	377	9	386
12/10/2008	2	8540	2230	0.70	627	23	649
10/6/2009	3	8877	2453	0.98	1019	17	1035
4/20/2010	3	13500	2217	1.38	470	8	478
10/13/2010	2	22150	2020	0.46	370	2	371
5/2/2011	3	8093	2250	<0.30	499	6	505
10/5/2011	3	11787	2780	0.53	701	3	704
4/25/2012	3	10670	2417	0.45	593	66	660
10/9/2012	3	9023	2670	2.40	1163	25	1188
4/24/2013	3	9747	3597	15.33	1137	10.90	1148
10/24/2013	3	13233	2540	0.75	583	0.91	584
North Reference Plot							
Surface							
4/20/2010	1	4130	2,840	1.29	340	3	343
10/13/2010	2	6135	2485	0.69	425	4.00	429
5/2/2011	2	4605	3320	0.74	754	1.91	755
10/5/2011	2	5595	3620	1.05	1070	11	1081
4/25/2012	8/3[1]	8770	2365	0.40	590	1	591
10/9/2012	8/3[1]	9530	2290	6.00	235	1	236
4/24/2013	8/3[1]	7740	3110	<0.30	875	0.70	876
10/25/2013	8/3[1]	4415	3140	<0.30	895	2.60	898
Subsurface							
4/20/2010	1	17800	3320	2.50	385	3.43	388
10/13/2010	2	11450	3130	0.49	343	1.23	344
5/2/2011	2	15950	3830	<0.30	457	1.2	458

Appendix C-11
Mean Soil Nutrient Analytical Values on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location and Date	Number of Samples	Soil Chemistry					
		Average Calcium (mg/kg)	Average Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
10/5/2011	2	30335	4275	<0.50	698	2	700
4/25/2012	2	11765	3025	<0.30	430	6	436
10/9/2012	2	9215	1980	<3.00	430	0.1	430
4/24/2013	2	10165	3590	<0.30	790	2.10	792
10/25/2013	2	26800	4420	<0.30	705	3.40	708
West Amendment Plot - Control							
				Surface			
7/12/2006	2	15400	2120	<10.00	785	<200	785
12/10/2008	2	5625	2110	0.33	397	5.18	402
10/6/2009	3	13310	2567	0.47	1039	8.03	1047
4/20/2010	3	6363	2863	1.82	1090	3.12	1093
10/13/2010	2	13180	3005	0.66	949	2.19	951
5/3/2011	3	6120	2700	0.59	813	2.12	815
10/4/2011	3	8427	3987	<0.50	1467	1.17	1468
4/26/2012	8/3[1]	9697	3337	0.70	873	2.83	876
10/8/2012	8/3[1]	11470	2960	<3.00	1013	5.97	1019
4/23/2013	8/3[1]	19120	3210	<0.30	1013	2.67	1016
10/24/2013	8/3[1]	13213	3143	0.80	1120	0.23	1120
				Subsurface			
12/10/2008	2	49500	2485	0.34	492	3.38	495
10/6/2009	3	30003	2757	0.39	937	2.97	940
4/20/2010	3	111733	1867	3.37	328	2.12	330
10/13/2010	2	44650	3275	0.48	918	5.31	923
5/3/2011	3	74467	2863	<0.30	931	1.39	933
10/4/2011	3	66767	4317	<0.50	1990	1.90	1992
4/26/2012	3	39060	3987	0.40	923	2.30	926
10/8/2012	3	85033	3170	<3.00	850	2.80	853
4/23/2013	3	121867	2960	<0.30	717	2.40	719
10/24/2013	3	78400	3067	<0.53	1093	0.52	1094
West Reference Plot							
				Surface			
4/20/2010	1	7930	3060	2.55	1250	3	1253
10/13/2010	2	13410	2860	0.58	871	1.37	872
10/4/2011	2	20850	3705	<0.50	1088	2.0	1090
4/26/2012	3	35350	2720	2.40	815	4.5	819
10/8/2012	3	20700	2915	<3.00	1140	2.6	1143
4/23/2013	3	13150	3545	2.00	980	2.25	982
10/24/2013	3	18550	3345	<0.30	980	0.50	981
				Subsurface			
4/20/2010	1	142000	1890	5.57	609	1.83	611
10/13/2010	2	52650	2855	0.49	1140	1.25	1141
10/4/2011	2	63850	4120	<0.50	1170	1.40	1171
4/26/2012	2	42100	2450	<0.30	475	1.45	476
10/8/2012	2	58700	2655	<3.00	1100	1.80	1102
4/23/2013	2	125000	2020	<0.30	455	1.75	457
10/24/2013	2	65400	3055	0.50	890	1.45	891

Notes:

Surface samples collected in top 6 inches of soil profile. Subsurface samples collected in six inches above calliche layer. (or if no caliche layer shallower than 24", then 18-24")
s.u. - standard units
mg/kg - milligrams per kilogram
TOC - Total Organic Carbon
SPLP - Synthetic Precipitation Leaching Procedure
mg/L - milligrams per liter
nd - non-detect. Detection limit indicated in paratheses.
1 - Weighted average 0-1" and 2-4" samples to represent 0-4" sample

Appendix C-12
Soil Nutrient Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
Northeast Amendment Plot - Lime and Organic Matter Only (2006 and spring 2008 results were sampled in a slightly different location than December 2008 to 2012)							
Surface							
BBL 005 Northeast 0-4"	7/12/2006	2,870	1,390	<10.00	319	<200	319
ARC 001 Northeast A 0-6"	5/7/2008	3,610	2,230	0.91	564	3	567
ARC 002 Northeast A 0-6"	5/7/2008	5,290	3,060	0.65	868	4	872
Northeast-003 0-6"	12/10/2008	4,290	2,690	13.20	693	16	709
Northeast-004 0-6"	12/10/2008	3,110	2,280	1.74	740	14	754
Northeast-01 0-6"	10/7/2009	5,140	5,300	9.26	1,910	47	1,957
Northeast-02 0-6"	10/6/2009	4,850	3,610	3.71	1,580	19	1,599
Northeast-03 0-6"	10/7/2009	4,230	3,300	6.31	1,300	47	1,347
Northeast-01 0-6"	4/21/2010	4,960	4,880	1.93	859	8	867
Northeast-02 0-6"	4/21/2010	6,160	4,640	1.71	1,300	6	1,306
Northeast-03 0-6"	4/21/2010	4,380	3,680	2.35	900	20	920
Northeast-01 0-6"	10/14/2010	3,400	3,180	1.64	731	8	739
Northeast-02 0-6"	10/14/2010	6,270	4,280	0.63	587	3	590
Northeast-01 0-6"	5/3/2011	5,830	4,140	2.06	1,200	4	1,204
Northeast-02 0-6"	5/3/2011	5,270	4,710	2.47	1,220	10	1,230
Northeast-03 0-6"	5/3/2011	8,390	4,520	7.64	1,940	14	1,954
Northeast-01 0-6"	10/7/2011	6,820	4,300	2.10	1,580	16	1,596
Northeast-02 0-6"	10/7/2011	5,670	4,150	0.70	973	5	978
Northeast-03 0-6"	10/7/2011	5,270	4,880	2.40	1,520	14	1,534
Northeast-01 0-6"	4/25/2012	4,630	3,200	2.00	1,710	17	1,727
Northeast-02 0-6"	4/25/2012	4,020	3,050	3.70	1,210	16	1,226
Northeast-03 0-6"	4/25/2012	4,290	4,420	8.10	1,330	28	1,358
Northeast-01 0-6"	10/9/2012	5,280	3,100	9.40	1,460	27	1,487
Northeast-02 0-6"	10/9/2012	4,420	2,990	<3.00	1,880	7	1,887
Northeast-03 0-6"	10/9/2012	6,530	4,360	4.00	1,590	4	1,594
Northeast-01 0-6"	4/25/2013	5,360	3,880	15.50	2,370	38	2,408
Northeast-02 0-6"	4/25/2013	9,320	4,980	1.30	3,270	27	3,297
Northeast-03 0-6"	4/25/2013	5,860	4,080	<0.30	1,380	8	1,388
Northeast-01 0-6"	10/24/2013	8,000	4,630	<0.30	1,490	3	1,493
Northeast-02 0-6"	10/24/2013	5,790	3,340	26.70	2,760	5	2,765
Northeast-03 0-6"	10/24/2013	4,950	3,460	1.30	1,020	2	1,022
Subsurface							
ARC 001 EAST A 18-20"	5/7/2008	10,400	2,910	0.33	572	2	574
ARC 002 EAST A 18-24"	5/7/2008	7,100	2,980	<0.30	502	2	504
Northeast-003 18-20"	12/10/2008	5,580	2,590	0.40	177	6	183
Northeast-004 18-20"	12/10/2008	9,100	2,400	1.12	664	7	671
Northeast-01 13-19"	10/6/2009	5,940	4,050	4.53	1,690	17	1,707
Northeast-02 18"	10/7/2009	8,100	4,200	1.85	1,820	9	1,829
Northeast-03 8-16"	10/7/2009	12,600	4,340	3.07	1,380	18	1,398
Northeast-01 18-24"	4/21/2010	4,570	4,140	2.50	698	4	702
Northeast-02 18-24"	4/21/2010	5,190	3,000	1.89	1,040	7	1,047
Northeast-03 18-24"	4/21/2010	4,670	3,540	2.09	918	7	925
Northeast-01 12-18"	10/14/2010	12,700	3,810	0.56	498	1	499

Appendix C-12
Soil Nutrient Analytical Values for Individual Samples on Amendment and Reference Plots

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Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
Northeast-02 6-12"	10/14/2010	6,690	4,420	0.45	667	2	669
Northeast-01 12-18"	5/3/2011	6,940	4,840	<0.30	668	3	671
Northeast-02 18-24"	5/3/2011	6,830	4,970	<0.30	803	4	807
Northeast-03 18-24"	5/3/2011	4,570	4,890	<0.30	780	2	782
Northeast-01 18-24"	10/7/2011	7,760	3,180	<0.50	697	2	699
Northeast-02 18-24"	10/7/2011	8,530	4,640	<0.50	1,200	2	1,202
Northeast-03 18-24"	10/7/2011	8,000	5,680	0.60	975	2	977
Northeast-01 12-18"	4/25/2012	7,080	2,840	<0.30	1,000	1	1,001
Northeast-02 18-24"	4/25/2012	7,040	3,990	<0.30	880	9	889
Northeast-03 18-24"	4/25/2012	10,200	4,360	<0.30	640	6	646
Northeast-01 18-24"	10/9/2012	6,240	3,490	1.10	1,420	6	1,426
Northeast-02 18-24"	10/9/2012	10,600	3,350	0.90	920	3	923
Northeast-03 18-24"	10/9/2012	8,050	4,740	<3.00	800	3	803
Northeast-01 6-12"	4/25/2013	7,370	4,340	3.00	1,270	5	1,275
Northeast-02 18/24"	4/25/2013	17,800	4,320	2.00	680	3	683
Northeast-03 6-12"	4/25/2013	8,090	3,210	<0.30	1,190	2	1,192
Northeast-01 15-21"	10/24/2013	7,020	4,220	2.00	950	1	951
Northeast-02 15-21"	10/24/2013	8,860	3,570	3.30	920	3	923
Northeast-03 6-12"	10/24/2013	4,890	3,220	1.10	1,000	3	1,003
Northeast Reference Plot							
Surface							
NE Ref 0-6"	4/21/2010	6,380	3,730	1.99	368	4	372
NE Ref-01 0-6"	10/14/2010	3,660	3,020	0.74	782	6	788
NE Ref-02 0-6"	10/14/2010	6,080	4,000	21.40	1,030	19	1,049
NE Ref-01 0-6"	5/3/2011	3,690	3,170	10.80	1,250	11	1,261
NE Ref-02 0-6"	5/3/2011	4,960	3,810	5.66	1,530	10	1,540
NE Ref-01 0-6"	10/7/2011	4,130	3,590		1,280	17	1,297
NE Ref-02 0-6"	10/7/2011	5,330	4,590	0.80	1,320	7	1,327
NE Ref-01 0-6"	4/25/2012	4,170	4,010	1.90	1,160	6	1,166
NE Ref-02 0-6"	4/25/2012	3,200	3,420	1.10	910	3	913
NE Ref-01 0-6"	10/9/2012	5,940	3,810	4.00	640	1	641
NE Ref-02 0-6"	10/9/2012	3,600	3,380	<3.00	800	9	809
NE Ref-01 0-6"	4/25/2013	5,940	4,210	5.20	1,720	20	1,740
NE Ref-02 0-6"	4/25/2013	5,130	3,790	7.90	2,510	36	2,546
NE Ref-01 0-6"	10/23/2013	5,550	3,760	0.80	1,092	1	1,093
NE Ref-02 0-6"	10/23/2013	2,830	3,580	1.20	1,080	6	1,086
Subsurface							
NE Ref 18-24"	4/21/2010	9,960	3,250	1.31	385	3	388
NE Ref-01 18-22"	10/14/2010	10,300	3,450	0.49	616	3	619
NE Ref-02 18-24"	10/14/2010	19,600	2,730	0.73	640	3	643
NE Ref-01 12-18"	5/3/2011	5,030	4,060	0.64	1,400	5	1,405
NE Ref-02 12-18"	5/3/2011	3,690	2,370	<0.30	866	1	867

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Soil Nutrient Analytical Values for Individual Samples on Amendment and Reference Plots

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Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
NE Ref-01 18-24"	10/7/2011	41,800	5,090	<0.50	750	4	754
NE Ref-02 12-18"	10/7/2011	8,350	4,980	<0.50	846	2	848
NE Ref-01 12-18"	4/25/2012	7,030	3,570	0.30	730	1	731
NE Ref-02 6-12"	4/25/2012	6,690	5,510	<0.30	1,320	1	1,321
NE Ref-01 18-24"	10/9/2012	7,370	3,460	5.00	810	<0.5	810
NE Ref-02 12-18"	10/9/2012	18,800	5,040	<0.30	702	3	705
NE Ref-01 6-12"	4/25/2013	8,790	4,380	<0.30	740	3	743
NE Ref-02 18-24"	4/25/2013	13,400	4,710	0.40	770	3	773
NE Ref-01 12-18"	10/23/2013	6,090	3,330	1.10	930	3	933
NE Ref-02 12-18"	10/23/2013	4,150	3,320	0.60	970	2	972
East Amendment Plot - Lime and Organic Matter with Tilling							
Surface							
BBL 006 East 0-1"	7/12/2006	4,100	1,560	<10.00	293	<200	293
BBL 006 East 2-4"	7/12/2006	3,900	2,370	<10.00	890	<200	890
BBL 007 East 0-1"	7/12/2006	4,090	2,100	<10.00	309	<200	309
BBL 007 East 2-4"	7/12/2006	2,960	2,240	<10.00	827	<200	827
ARC 001 East 0-6"	5/7/2008	1,900	1,810	0.37	247	1	248
ARC 002 East 0-6"	5/7/2008	5,840	3,840	3.53	587	3	590
East-003 0-6"	12/10/2008	4,420	3,540	6.31	546	30	576
East-004 0-6"	12/10/2008	15,000	5,500	0.85	769	127	896
East-01 0-6"	10/6/2009	15,600	5,250	1.34	2,290	23	2,313
East-02 0-6"	10/6/2009	4,910	4,970	0.97	1,630	15	1,645
East-03 0-6"	10/6/2009	5,680	4,650	4.90	1,300	73	1,373
East-01 0-6"	4/21/2010	6,150	4,950	2.79	1,170	94	1,264
East-02 0-6"	4/21/2010	4,890	4,240	2.95	1,160	27	1,187
East-03 0-6"	4/21/2010	6,820	4,780	2.16	1,970	60	2,030
East-01 0-6"	10/14/2010	4,090	3,990	1.33	1,170	13	1,183
East-02 0-6"	10/14/2010	4,430	4,070	2.20	1,190	29	1,219
East-01 0-6"	5/3/2011	5,730	4,660	5.28	2,270	28	2,298
East-02 0-6"	5/3/2011	10,600	6,030	5.09	3,360	44	3,404
East-03 0-6"	5/3/2011	5,430	6,930	3.16	1,670	28	1,698
East-01 0-6"	10/6/2011	6,030	5,190	<0.50	983	4	987
East-02 0-6"	10/6/2011	3,910	3,260	5.10	949	43	992
East-03 0-6"	10/6/2011	2,700	2,600	0.80	770	5	775
East-01 0-6"	4/24/2012	5,770	5,910	<0.3	990	8	998
East-02 0-6"	4/24/2012	6,730	5,610	2.00	2,590	46	2,636
East-03 0-6"	4/24/2012	4,740	4,560	1.50	1,580	26	1,606
East-01 0-6"	10/10/2012	4,840	4,580	<3.00	1,430	13	1,443
East-02 0-6"	10/10/2012	9,080	5,570	<3.00	2,920	45	2,965
East-03 0-6"	10/10/2012	6,050	4,210	<3.00	1,470	28	1,498
East-01 0-6"	4/24/2013	5,370	4,830	1.50	1,980	54	2,034
East-02 0-6"	4/24/2013	7,030	7,370	<0.30	1,850	49	1,899
East-03 0-6"	4/24/2013	2,790	3,260	5.80	870	33	903
East-01 0-6"	10/25/2013	10,900	4,870	<0.30	3,650	4	3,654
East-02 0-6"	10/25/2013	3,380	3,860	<0.30	1,150	1	1,151
East-03 0-6"	10/25/2013	4,000	4,240	2.00	1,240	7	1,247

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Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
East Amendment Plot - Lime and Organic Matter with Tilling							
Subsurface							
ARC 001 East 18-24"	5/7/2008	100,000	2,060	0.35	228	2	230
ARC 002 East 18-24"	5/7/2008	21,100	3,770	<0.30	242	2	244
East-003 18-20"	12/10/2008	72,400	4,690	1.17	468	10	478
East-004 18-20"	12/10/2008	84,200	3,670	1.28	393	54	447
East-01 12-18"	10/6/2009	27,600	4,940	0.72	1,690	13	1,703
East-02 9-15"	10/6/2009	4,570	4,470	0.73	1,400	8	1,408
East-03 10-18"	10/6/2009	15,600	5,580	1.11	941	20	961
East-01 15-21"	4/21/2010	27,900	4,260	2.45	534	34	568
East-02 18-24"	4/21/2010	19,400	5,410	1.87	516	6	522
East-03 18-24"	4/21/2010	32,200	4,620	2.70	405	37	442
East-01 18-24"	10/14/2010	79,100	4,440	0.69	518	1	519
East-02 18-24"	10/14/2010	91,600	4,950	0.41	595	78	673
East-01 18-24"	5/3/2011	5,150	5,040	<0.30	1,440	3	1,443
East-02 6-12"	5/3/2011	7,450	5,070	0.59	1,090	7	1,097
East-03 18-24"	5/3/2011	23,200	4,680	0.70	662	9	671
East-01 6-12"	10/6/2011	6,770	6,600	<0.50	1,090	2	1,092
East-02 6-12"	10/6/2011	3,860	3,780	0.60	1,020	12	1,032
East-03 6-12"	10/6/2011	3,190	3,110	<0.50	865	4	869
East-01 12-18"	4/24/2012	28,300	5,170	<0.30	850	54	904
East-02 18-24"	4/24/2012	11,600	5,740	<0.30	1,370	44	1,414
East-03 18-24"	4/24/2012	8,770	3,880	0.60	2,750	50	2,800
East-01 18-24"	10/10/2012	28,100	4,830	1.50	740	14	754
East-02 12-18"	10/10/2012	24,100	5,600	<0.30	860	7	867
East-03 18-24"	10/10/2012	2,470	2,870	4.00	610	3	613
East-01 18-24"	4/24/2013	146,000	6,020	<0.30	680	8	688
East-02 6-12"	4/24/2013	8,160	7,380	<0.30	1,260	15	1,275
East-03 6-12"	4/24/2013	7,610	6,670	0.30	920	7	927
East-01 15-21"	10/25/2013	99,000	6,370	0.40	660	9	669
East-02 18-24"	10/25/2013	101,000	4,860	<0.30	600	3	603
East-03 10-16"	10/25/2013	5,600	4,860	0.70	870	4	874
East Reference Plot							
Surface							
East Ref 0-6"	4/21/2010	2,410	3,040	2.10	777	4	781
East Ref-01 0-6"	10/14/2010	1,750	2,540	0.54	621	5	626
East Ref-02 0-6"	10/14/2010	2,670	2,700	2.52	789	12	801
East Ref-01 0-6"	5/3/2011	2,680	3,700	0.51	821	3	824
East Ref-02 0-6"	5/3/2011	2,150	2,780	0.76	560	3	563
East Ref-01 0-6"	10/6/2011	3,710	5,390	0.80	886	3	889
East Ref-02 0-6"	10/6/2011	2,550	2,720	0.60	403	3	406
East Ref-01 0-6"	4/24/2012	2,660	2,400	<0.30	650	9	659
East Ref-02 0-6"	4/24/2012	2,810	3,240	<0.30	530	1	531
East Ref-01 0-6"	10/10/2012	2,600	2,790	<3.00	760	5.20	765
East Ref-02 0-6"	10/10/2012	5,790	3,140	<0.30	520	8.80	529
East Ref-01 0-6"	4/24/2013	3,770	4,200	<0.30	910	0.80	911
East Ref-02 0-6"	4/24/2013	5,540	3,760	<0.30	750	10.30	760
East Ref-01 0-6"	10/25/2013	3,260	2,820	<0.30	630	0	630
East Ref-02 0-6"	10/25/2013	2,600	2,830	<0.30	810	3	813
Subsurface							
East Ref-01 18-22"	10/14/2010	118,000	4,180	0.44	685	4	689
East Ref-02 12-18"	10/14/2010	81,000	4,320	0.59	542	10	552
East Ref-01 6-12"	5/3/2011	5,380	4,570	<0.30	1,060	6	1,066
East Ref-02 6-12"	5/3/2011	3,010	3,820	<0.30	296	7	303
East Ref-01 6-12"	10/6/2011	7,020	7,320	<0.50	726	5	731
East Ref-02 6-12"	10/6/2011	2,240	3,430	<0.50	865	7	872
East Ref-01 6-12"	4/24/2012	24,100	4,240	<0.30	940	8	948
East Ref-02 6-12"	4/24/2012	4,810	4,570	<0.30	830	8	838
East Ref-01 6-12"	10/10/2012	8,220	5,210	0.30	780	13	793
East Ref-02 6-12"	10/10/2012	10,900	4,470	<0.30	650	3	653
East Ref-01 6-12"	4/24/2013	37,300	7,010	<0.30	1,050	2	1,052
East Ref-02 6-12"	4/24/2013	6,580	4,710	<0.30	1,030	9	1,039
East Ref-01 6-12"	10/25/2013	4,580	3,750	<0.30	960	4	964
East Ref-02 12-18"	10/25/2013	4,980	2,830	<0.30	920	3	923
North Amendment Plot - Lime and Organic Matter with Tilling (2006 and spring 2008 results were sampled in a slightly different location than December 2008 to 2012							
Surface							
BBL 001 NORTH 0-5"	7/12/2006	1,610	2,200	1.05	782	5	787

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Soil Nutrient Analytical Values for Individual Samples on Amendment and Reference Plots

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Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
BBL 002 NORTH 0-5"	7/12/2006	3,140	2,810	<10.00	809	<200	809
ARC 001 NORTH 0-6"	5/8/2008	8,110	2,700	10.20	726	15	741
ARC 002 NORTH 0-6"	5/8/2008	8,060	2,450	0.61	415	3	418
North-003 0-6"	12/10/2008	7,200	3,970	0.89	866	131	997
North-004 0-6"	12/10/2008	7,920	2,250	0.42	608	27	635
North-005 0-6"	12/10/2008	7,920	2,200	0.69	372	24	396
North-01 0-6"	10/6/2009	7,880	2,610	0.69	1,210	45	1,255
North-02 0-6"	10/6/2009	6,840	4,830	2.99	1,340	35	1,375
North-03 0-6"	10/6/2009	7,870	2,890	2.91	1,370	40	1,410
North-01 0-6"	4/20/2010	8,410	2,440	2.01	725	8	733
North-02 0-6"	4/20/2010	7,680	2,070	3.34	841	6	847
North-03 0-6"	4/20/2010	7,560	2,670	5.94	1,930	65	1,995
North-01 0-6"	10/13/2010	9,630	2,390	0.62	400	1	401
North-02 0-6"	10/13/2010	7,830	3,160	0.79	742	10	752
North-01 0-6"	5/2/2011	6,440	3,330	14.80	1,750	65	1,815
North-02 0-6"	5/2/2011	7,410	3,550	0.45	983	9	992
North-03 0-6"	5/2/2011	8,250	2,980	0.53	747	4	751
North-01 0-6"	10/5/2011	10,000	3,730	2.60	1,960	44	2,004
North-02 0-6"	10/5/2011	9,650	3,070	0.80	1,440	18	1,458
North-03 0-6"	10/5/2011	7,500	3,140	0.90	1,230	22	1,252
North-01 0-6"	4/25/2012	8,310	2,760	<0.30	740	1	741
North-02 0-6"	4/25/2012	10,100	5,540	2.10	2,710	44	2,754
North-03 0-6"	4/25/2012	9,540	2,260	<0.30	950	1	951
North-01 0-6"	10/9/2012	8,150	3,740	<3.00	2,830	41	2,871
North-02 0-6"	10/9/2012	7,760	4,020	4.00	2,350	55	2,405
North-03 0-6"	10/9/2012	8,610	3,020	4.00	870	7	877
North-01 0-6"	4/24/2013	8,920	3,730	32.00	1,220	13	1,233
North-02 0-6"	4/24/2013	9,330	4,050	14.00	1,370	18	1,388
North-03 0-6"	4/24/2013	9,780	3,800	2.00	1,210	23	1,233
North-01 0-6"	10/24/2013	7,320	2,880	<0.30	550	1	551
North-02 0-6"	10/24/2013	8,680	3,110	2.00	1,370	4	1,374
North-03 0-6"	10/24/2013	7,850	2,810	2.00	940	3	943
North Amendment Plot - Lime and Organic Matter with Tilling (2006 and spring 2008 results were sampled in a slightly different location than December 2008 to 2012							
Subsurface							
ARC 001 NORTH 18-24"	5/8/2008	16,400	2,010	<0.30	343	15	358
ARC 002 NORTH 18-24"	5/8/2008	9,220	1,940	<0.30	411	3	414
North-003 16-18"	12/10/2008	8,490	2,450	0.72	731	34	765
North-004 18-20"	12/10/2008	8,590	2,010	0.69	522	12	534
North-01 12-20"	10/6/2009	8,810	2,200	0.49	676	10	686
North-02 21"	10/6/2009	8,520	2,440	0.62	1,140	15	1,155
North-03 11-19"	10/6/2009	9,300	2,720	1.84	1,240	24	1,264
North-01 18-24"	4/20/2010	15,200	2,350	1.54	331	7	338
North-02 18-24"	4/20/2010	12,900	2,090	1.35	490	9	499
North-03 11-19"	4/20/2010	12,400	2,210	1.26	588	8	596
North-01 18-24"	10/13/2010	23,000	2,040	0.43	369	2	371
North-02 18-24"	10/13/2010	21,300	2,000	0.49	370	1	371
North-01 18-24"	5/2/2011	8,670	2,260	<0.30	436	5	441
North-02 12-18"	5/2/2011	6,770	2,750	<0.30	632	12	644
North-03 18-24"	5/2/2011	8,840	1,740	<0.30	429	1	430
North-01 18-24"	10/5/2011	14,700	3,210	<0.50	1,050	5	1,055
North-02 18-24"	10/5/2011	10,700	2,390	<0.50	396	3	399
North-03 18-24"	10/5/2011	9,960	2,740	0.60	657	2	659
North-01 18-24"	4/25/2012	8,040	2,410	0.50	640	92	732
North-02 18-24"	4/25/2012	8,470	2,510	0.40	540	93	633
North-03 18-24"	4/25/2012	15,500	2,330	<0.30	600	14	614
North-01 18-24"	10/9/2012	8,440	3,100	4.00	1,170	25	1,195
North-02 18-24"	10/9/2012	8,760	2,960	0.80	1,270	42	1,312
North-03 18-24"	10/9/2012	9,870	1,950	<3.00	1,050	9	1,059
North-01 12-18"	4/24/2013	8,740	3,770	45.00	1,030	5	1,035
North-02 12-18"	4/24/2013	10,100	3,760	0.50	1,020	7	1,027
North-03 12-18"	4/24/2013	10,400	3,260	0.50	1,360	20	1,380
North-01 12-18"	10/24/2013	9,100	2,670	1.00	850	0	850
North-02 15-21"	10/24/2013	17,300	2,410	0.50	630	1	631
North-03 18-24"	10/24/2013	13,300	2,540	<0.30	270	1	271
North Reference Plot							
Surface							
North Ref 0-6"	4/20/2010	4,130	2,840	1.29	340	3	343

Appendix C-12
Soil Nutrient Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

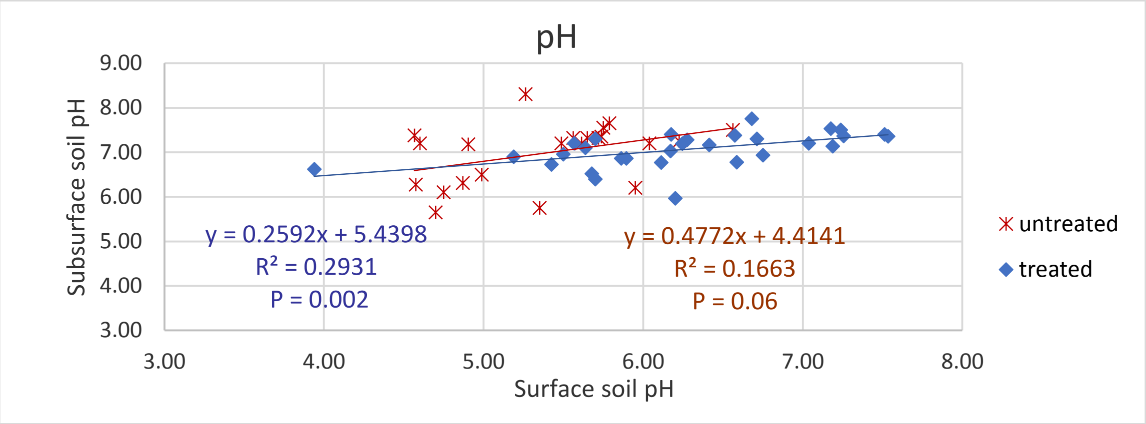
Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
North Ref-01 0-6"	10/13/2010	5,440	2,750	0.62	711	6	717
North Ref-02 0-6"	10/13/2010	6,830	2,220	0.76	139	2	141
North Ref-01 0-6"	5/2/2011	5,490	3,190	<0.30	860	1	861
North Ref-02 0-6"	5/2/2011	3,720	3,450	0.74	647	3	650
North Ref-01 0-6"	10/5/2011	6,510	4,040	0.80	1,110	18	1,128
North Ref-02 0-6"	10/5/2011	4,680	3,200	1.30	1,030	3	1,033
North Ref-01 0-6"	4/25/2012	10,200	2,640	0.40	790	0	790
North Ref-02 0-6"	4/25/2012	7,340	2,090	0.40	390	1	391
North Ref-01 0-6"	10/9/2012	9,310	2,390	6.00	240	1	241
North Ref-02 0-6"	10/9/2012	9,750	2,190	<3.00	230	1	231
North Ref-01 0-6"	4/24/2013	5,280	3,460	<0.30	990	1	991
North Ref-02 0-6"	4/24/2013	10,200	2,760	<0.30	760	1	761
North Ref-01 0-6"	10/25/2013	4,430	2,760	<0.30	880	4	884
North Ref-02 0-6"	10/25/2013	4,400	3,520	<0.30	910	2	912
Subsurface							
North Ref 18-24"	4/20/2010	17,800	3,320	2.50	385	3	388
North Ref-01 18-24"	10/13/2010	15,900	4,460	0.52	421	2	423
North Ref-02 18-24"	10/13/2010	7,000	1,800	0.47	264	1	265
North Ref-01 18-24"	5/2/2011	19,100	3,120	<0.30	383	1	384
North Ref-02 18-24"	5/2/2011	12,800	4,540	<0.30	531	2	533
North Ref-01 18-24"	10/5/2011	51,200	3,900	<0.50	478	3	481
North Ref-02 18-24"	10/5/2011	9,470	4,650	<0.50	918	2	920
North Ref-01 18-24"	4/25/2012	9,430	2,490	<0.30	400	8	408
North Ref-02 12-18"	4/25/2012	14,100	3,560	<0.30	460	4	464
North Ref-01 18-24"	10/9/2012	8,600	2,060	<3.00	340	<0.5	340
North Ref-02 18-24"	10/9/2012	9,830	1,900	<3.00	520	0.1	520
North Ref-01 6-12"	4/24/2013	7,830	5,000	<0.30	1,110	1.1	1,111
North Ref-02 18-24"	4/24/2013	12,500	2,180	0.30	470	3.1	473
North Ref-01 18-24"	10/25/2013	37,900	4,030	<0.30	510	3	513
North Ref-02 12-18"	10/25/2013	15,700	4,810	<0.30	900	4	904
West Amendment Plot (control)							
Surface							
BBL 003 WEST 0-4"	7/12/2006	11,700	2,370	<10.00	858	<200	858
BBL 004 WEST 0-4"	7/12/2006	19,100	1,870	<10.00	711	<200	711
West-003 0-6"	12/10/2008	5,240	1,940	0.36	307	5	312
West-004 0-6"	12/10/2008	6,010	2,280	<0.30	487	5	492
West-01 0-6"	10/6/2009	22,100	1,940	0.42	796	3	799
West-02 0-6"	10/6/2009	12,700	2,820	0.60	1,290	16	1,306
West-03 0-6"	10/6/2009	5,130	2,940	0.38	1,030	5	1,035
West-01 0-6"	4/20/2010	6,030	3,290	1.63	1,320	4	1,324
West-02 0-6"	4/20/2010	6,790	2,300	1.93	871	2	873
West-03 0-6"	4/20/2010	6,270	3,000	1.90	1,080	3	1,083
West-01 0-6"	10/13/2010	5,960	3,270	0.77	912	2	914
West-02 0-6"	10/13/2010	20,400	2,740	0.55	985	3	988
West-01 0-6"	5/3/2011	6,530	2,420	<0.30	723	1	724
West-02 0-6"	5/3/2011	7,280	3,150	0.45	919	3	922
West-03 0-6"	5/3/2011	4,550	2,530	0.73	798	3	801
West-01 0-6"	10/4/2011	8,620	4,380	<0.50	1,300	1	1,301
West-02 0-6"	10/4/2011	8,500	3,470	<0.50	1,650	2	1,652
West-03 0-6"	10/4/2011	8,160	4,110	<0.50	1,450	1	1,451
West-01 0-6"	4/26/2012	8,750	3,080	<0.30	830	2	832
West-02 0-6"	4/26/2012	6,240	3,270	<0.30	650	1	651
West-03 0-6"	4/26/2012	14,100	3,660	0.70	1,140	5	1,145
West-01 0-6"	10/8/2012	15,200	3,390	<3.00	1,270	7	1,277
West-02 0-6"	10/8/2012	5,510	2,950	<3.00	1,100	8	1,108
West-03 0-6"	10/8/2012	13,700	2,540	<3.00	670	3	673
West-01 0-6"	4/23/2013	6,850	3,260	<0.30	930	2	932
West-02 0-6"	4/23/2013	44,600	3,210	<0.30	1,010	5	1,015
West-03 0-6"	4/23/2013	5,910	3,160	<0.30	1,100	1	1,101
West-01 0-6"	10/24/2013	20,100	3,140	0.60	980	0	980
West-02 0-6"	10/24/2013	11,500	2,750	<0.30	1,010	0	1,010
West-03 0-6"	10/24/2013	8,040	3,540	1.00	1,370	0	1,370
Subsurface							
West-003 16-18"	12/10/2008	51,500	2,310	0.37	565	4	569
West-004 16-19"	12/10/2008	47,500	2,660	<0.30	418	3	421
West-01 10-15"	10/6/2009	42,300	2,840	0.39	1,110	3	1,113
West-02 18-20"	10/6/2009	42,400	2,360	0.38	912	3	915

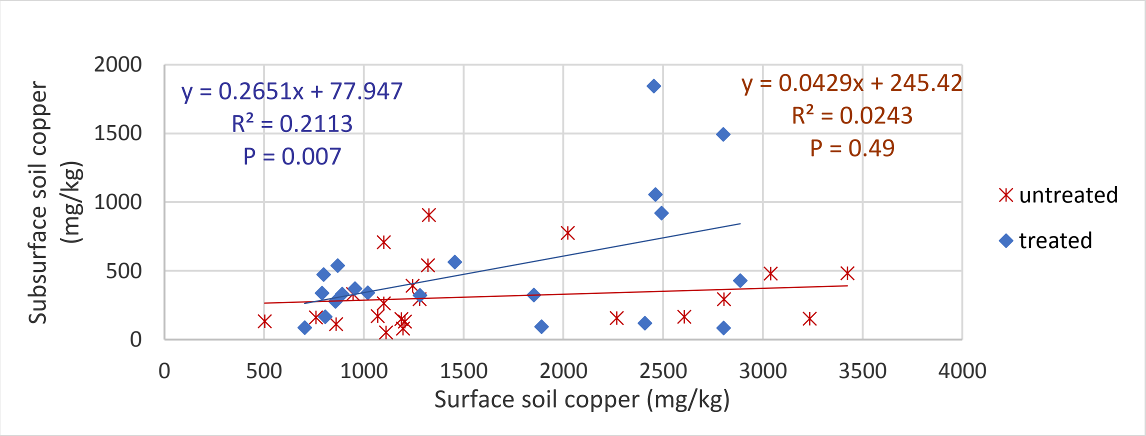
Appendix C-12
Soil Nutrient Analytical Values for Individual Samples on Amendment and Reference Plots

Year 5 Amendment Study Monitoring Report
Freeport-McMoRan Chino Mines Company
Vanadium, New Mexico

Sample Location	Sample Date	Soil Chemistry					
		Calcium (mg/kg)	Potassium (mg/kg)	Ammonia (mg/kg)	Nitrogen (TKN mg/kg)[1]	Nitrate/Nitrite as N (mg/kg)	Total Nitrogen (mg/kg)
West-03 18-24"	10/6/2009	5,310	3,070	0.41	788	3	791
West-01 18-24"	4/20/2010	94,200	2,010	2.19	171	2	173
West-02 18-24"	4/20/2010	102,000	2,060	3.28	358	2	360
West-03 18-24"	4/20/2010	139,000	1,530	4.65	454	2	456
West-01 11-17"	10/13/2010	51,700	3,500	0.43	961	7	968
West-02 6-12"	10/13/2010	37,600	3,050	0.52	875	3	878
West-01 18-24"	5/3/2011	57,500	2,870	<0.30	559	1	560
West-02 12-18"	5/3/2011	64,900	3,600	<0.30	1,320	1	1,321
West-03 18-24"	5/3/2011	101,000	2,120	<0.30	915	2	917
West-01 6-12"	10/4/2011	33,900	5,230	<0.50	2,270	1	2,271
West-02 12-18"	10/4/2011	107,000	3,530	<0.50	1,430	3	1,433
West-03 12-18"	10/4/2011	59,400	4,190	<0.50	2,270	1	2,271
West-01 18-24"	4/26/2012	65,500	4,070	<0.30	610	2	612
West-02 6-12"	4/26/2012	8,980	3,860	<0.30	990	2	992
West-03 6-12"	4/26/2012	42,700	4,030	0.40	1,170	3	1,173
West-01 12-18"	10/8/2012	128,000	2,260	<3.00	750	2	752
West-02 18-24"	10/8/2012	59,600	3,610	<3.00	690	2	692
West-03 12-18"	10/8/2012	67,500	3,640	<3.00	1,110	4	1,114
West-01 18-24"	4/23/2013	158,000	1,790	<0.30	400	1	401
West-02 6-12"	4/23/2013	37,600	5,030	<0.30	1,420	3	1,423
West-03 18-24"	4/23/2013	170,000	2,060	<0.30	330	3	333
West-01 18-24"	10/24/2013	123,000	1,990	0.30	670	0	670
West-02 18-24"	10/24/2013	62,300	3,530	1.00	1,140	1	1,141
West-03 6-12"	10/24/2013	49,900	3,680	<0.30	1,470	0	1,470
West Reference Plot (since amendment plot was not treated, West amendment and West reference plots are replicates)							
				Surface			
West Ref 0-6"	4/20/2010	7,930	3,060	2.55	1,250	3	1,253
West Ref-01 0-6"	10/13/2010	18,100	3,070	0.65	866	2	868
West Ref-02 0-6"	10/13/2010	8,720	2,650	0.52	876	1	877
West Ref-01 0-6"	10/4/2011	13,500	3,670	<0.50	855	2	857
West Ref-02 0-6"	10/4/2011	28,200	3,740	<0.50	1,320	2	1,322
West Ref-01 0-6"	4/26/2012	55,600	2,850	2.40	690	6	696
West Ref-02 0-6"	4/26/2012	15,100	2,590	<0.30	940	3	943
West Ref-01 0-6"	10/8/2012	23,900	2,790	<3.00	1,060	2	1,062
West Ref-02 0-6"	10/8/2012	17,500	3,040	<3.00	1,220	3	1,223
West Ref-01 0-6"	4/23/2013	13,100	3,880	<0.30	900	2	902
West Ref-01 0-6"	10/24/2013	20,500	3,530	<0.30	900	1	901
West Ref-02 0-6"	10/24/2013	16,600	3,160	<0.30	1,060	0	1,060
Subsurface							
West Ref 18-24"	4/20/2010	142,000	1,890	5.57	609	2	611
West Ref-01 6-12"	10/13/2010	46,800	2,980	0.45	1,170	1	1,171
West Ref-02 12-18"	10/13/2010	58,500	2,730	0.53	1,110	1	1,111
West Ref-01 12-18"	10/4/2011	49,900	4,180	<0.50	1,190	2	1,192
West Ref-02 18-24"	10/4/2011	77,800	4,060	<0.50	1,150	1	1,151
West Ref-01 18-24"	4/26/2012	47,300	2,550	<0.30	380	1	381
West Ref-02 18-24"	4/26/2012	36,900	2,350	<0.30	570	2	572
West Ref-01 18-24"	10/8/2012	56,800	3,040	<3.00	1,160	2	1,162
West Ref-02 18-24"	10/8/2012	60,600	2,270	<3.00	1,040	2	1,042
West Ref-01 18-24"	4/23/2013	130,000	1,780	<0.30	330	1	331
West Ref-02 18-24"	4/23/2013	120,000	2,260	<0.30	580	3	583
West Ref-01 12-18"	10/24/2013	73,300	3,110	0.40	1,020	2	1,022
West Ref-02 12-18"	10/24/2013	57,500	3,000	0.60	760	1	761
Organic Matter Amendment Composition[2]							
Pen # 1	4/10/2008	159,000	4,710	71.30	-	-	8,151
Pen # 2	4/10/2008	8,720	7,210	146.00	-	-	5,413

Notes:
s.u. - standard units
mg/kg - milligrams per kilogram
TOC - Total Organic Carbon
SPLP - Synthetic Precipitation Leaching Procedure
mg/L - milligrams per liter
nd - non-detect. Detection limit indicated in parentheses.
1 - TKN for the Oct 2011 sampling event was incorrectly analyzed by ACZ and was subsequently resubmitted to the original laboratory (Anatec) for this analysis even though the EPA's required hold time had been exceeded.
2 - In addition to copper, a suite of metals was tested on the organic matter in the field using XRF and all were below the detection limit.
Fall 2011 sample analysis was by ACZ Labs while all previous sample analysis was done by SVL





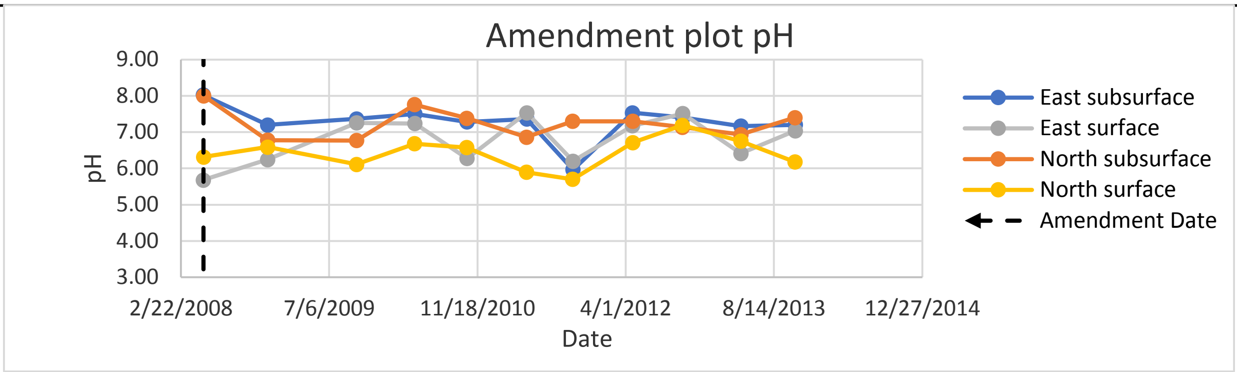
FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

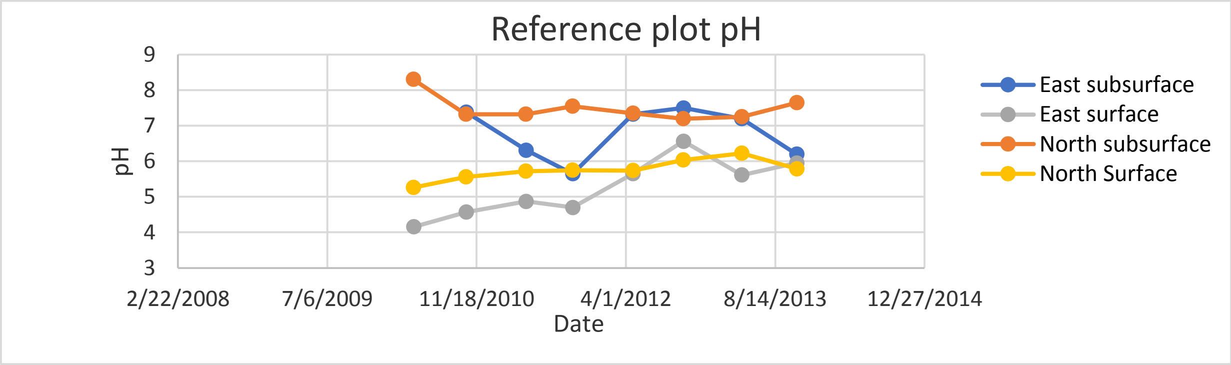
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

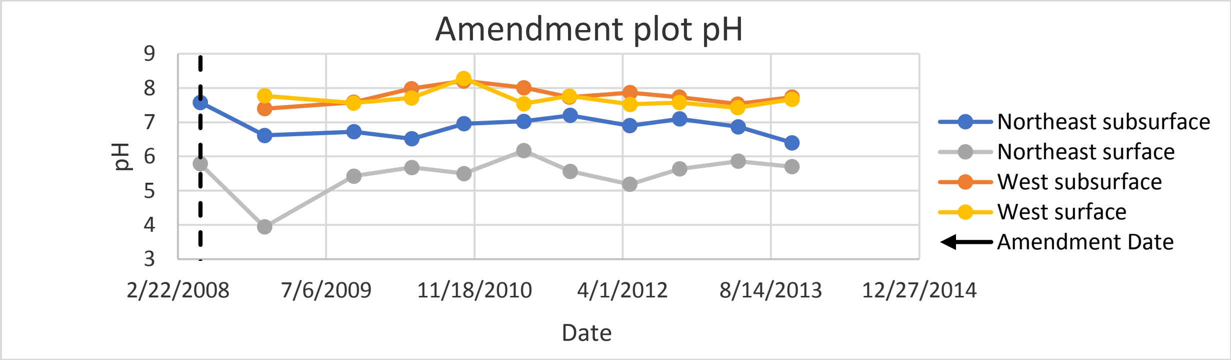
Relationship between surface and subsurface soil pH and copper concentrations

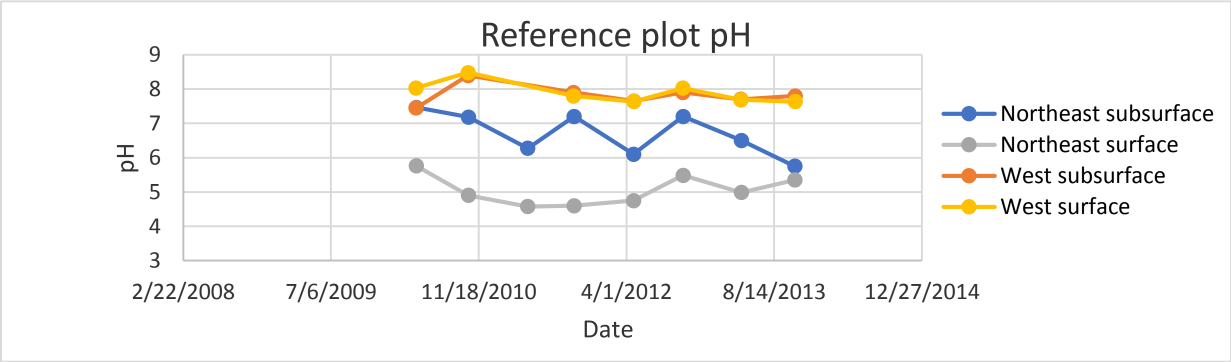
ARCADIS

FIGURE
Appendix C-13


Amendment plot pH


Reference plot pH


Amendment plot pH


Reference plot pH

FREEPORT-MCMORAN CHINO MINES COMPANY
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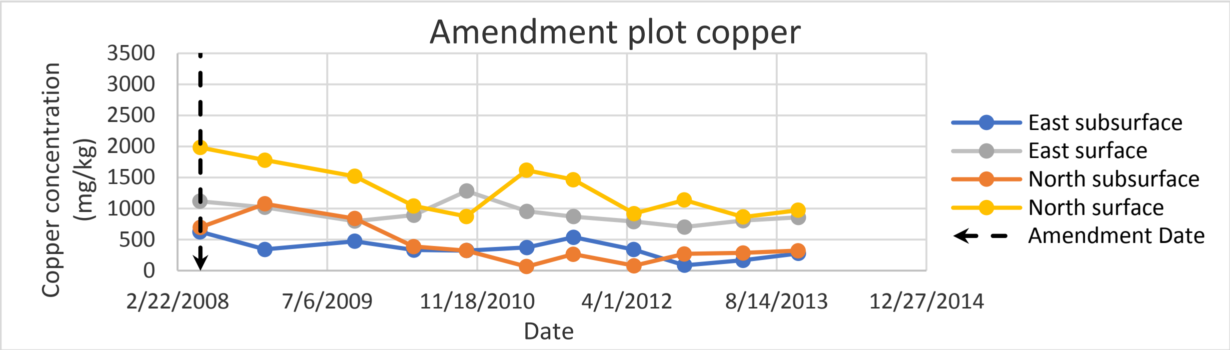
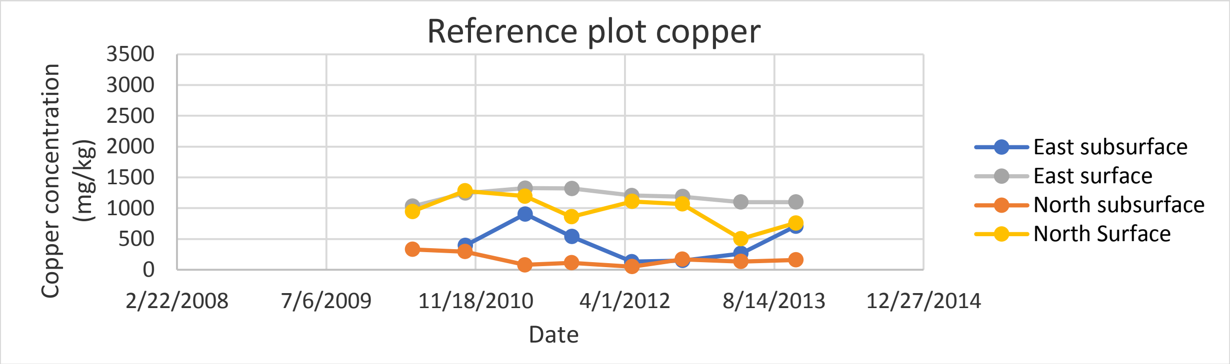
YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

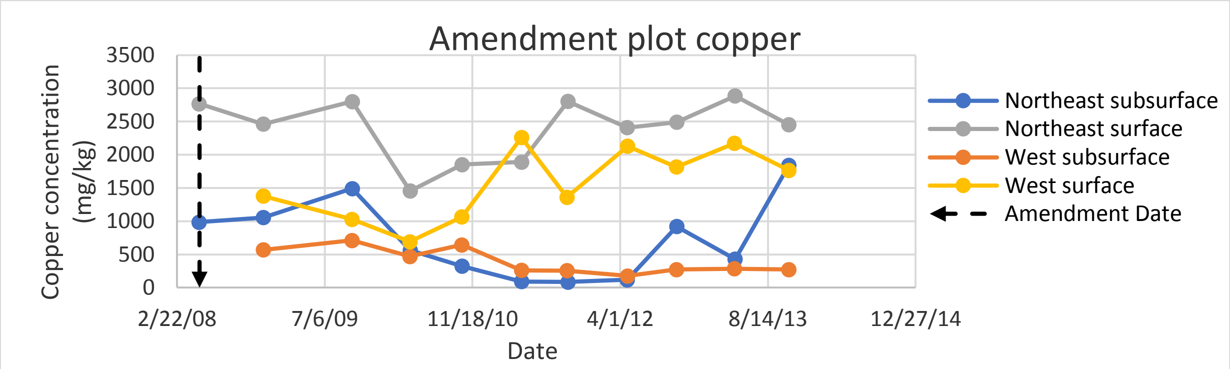
Change in pH in surface and subsurface soil over time

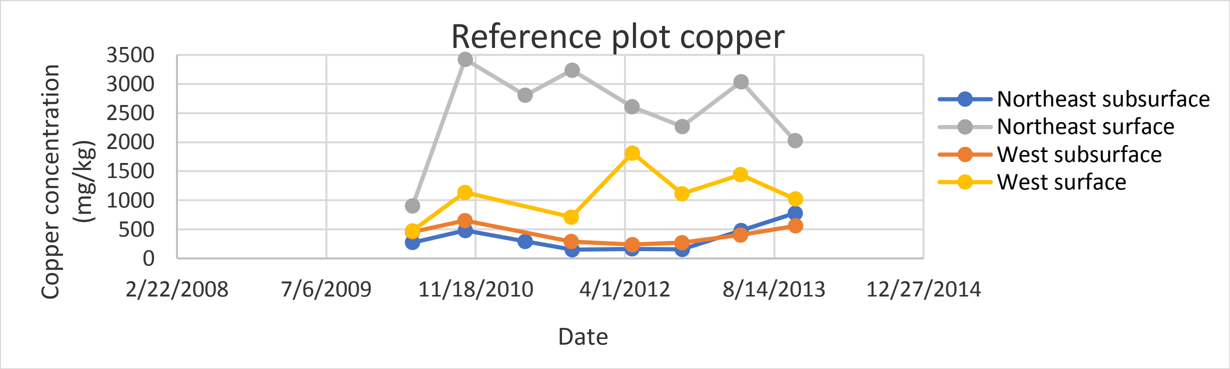
ARCADIS

FIGURE
Appendix C-14









FREEPORT-MCMORAN CHINO MINES COMPANY
VANADIUM, NEW MEXICO

YEAR 5 MONITORING REPORT – AMENDMENT STUDY PLOTS

Change in copper concentrations in surface and subsurface soil over time

ARCADIS

FIGURE
Appendix C-15

Appendix D

Photographic Logs

ARCADIS

PHOTOGRAPHIC LOG

Project Name: Year 5 Monitoring Report for STSIU Amendment Study Plots

Dates: July 2006, April - May 2008

Photo No.
1

Location:
North Amendment Plot July 2006

Photo No.
2

Location:
North Amendment Plot – May 2008

Photo No.
3

Location:
North Amendment Plot July 2006

Photo No.
4

Location:
North Amendment Plot May 2008

Photo No.
5

Location:
North Amendment Plot July 2006

Photo No.
6

Location:
North Amendment Plot May 2008

Photo No.
7

Location:
North Amendment Plot
April 2008

Photo No.
8

Location:
North Amendment Plot
Post-grubbing in May
2008

Photo No.
9

Location:
West Amendment Plot July 2006

Photo No.
10

Site Location:
West Amendment Plot May 2008

Photo No.
11

Site Location: West Amendment Plot July 2006

Photo No.
12

Site Location:
West Amendment Plot May 2008

Photo No. 13

Site Location: West Amendment Plot July 2006

Photo No. 14

Site Location: West Amendment Plot May 2008

Photo No.
15

Site Location: East Amendment Plot July 2006

Photo No.
16

Site Location:
East Amendment Plot May 2008

Photo No.
17

Site Location: East Amendment Plot July 2006

Photo No.
18

Site Location:
East Amendment Plot May 2008

Photo No.
19

Site Location:
East Amendment Plot Post-grubbing of Mesquite in May 2008

Photo No.
20

Site Location:
Northeast Amendment Plot April 2008

Photo No.
21

Site Location:
Northeast Amendment Plot
April 2008

Photo No.
22

Site Location:
Northeast Amendment Plot
May 2008

Photo No. **1**

Location:
East Amendment Plot during soil preparation

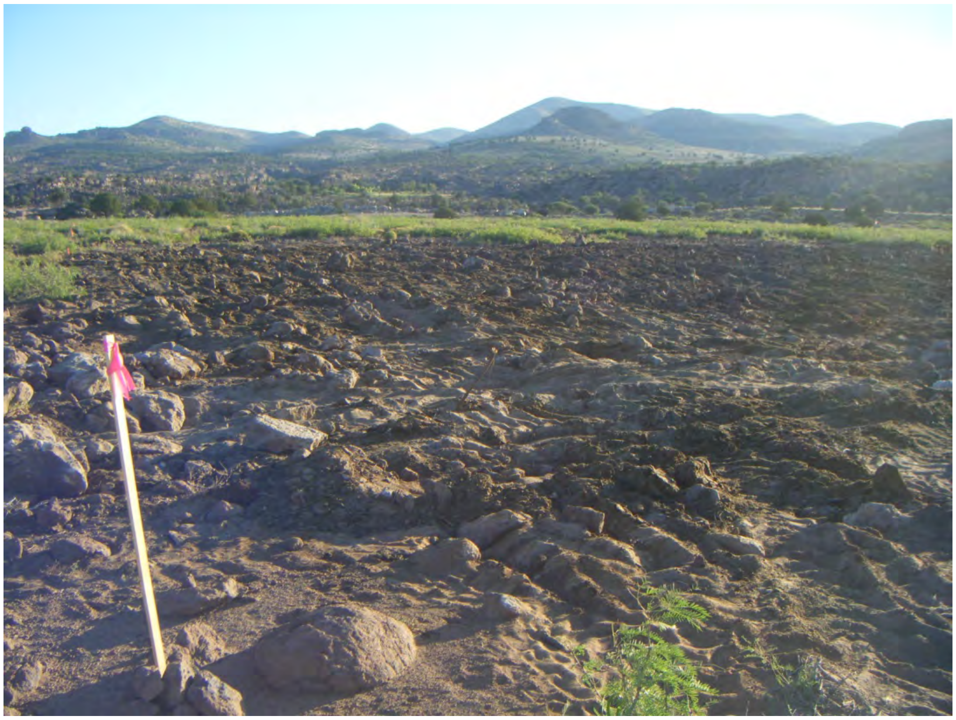


Photo No. **2**

Location:
East Amendment Plot during Soil Preparation

Photo No.
3

Location:
East Amendment Plot following Soil Preparation

Photo No.
4

Location:
East Amendment Plot following Soil Preparation

Photo No.
5

Location:
North Amendment Plot following Soil Preparation

Photo No.
6

Location:
North Amendment Plot following Soil Preparation

Photo No.
7

Location:
North Amendment Plot following Soil Preparation

Photo No.
8

Site Location:
North Amendment Plot following Soil Preparation

Photo No.
9

Site Location:
Lime Application on the Northeast Amendment Plot

Photo No.
10

Site Location:
Lime Application on the East Amendment Plot

Photo No.
11

Site Location:
Lime Application on the East Amendment Plot

Photo No.
12

Site Location:
Lime Application on the East Amendment Plot

Photo No.
13

Site Location:
East Amendment Plot
following Lime Application

Photo No.
1

Location/Description:
West Reference Plot
December 2008

Photo No.
2

Location/Description:
West Amendment Plot
December 2008

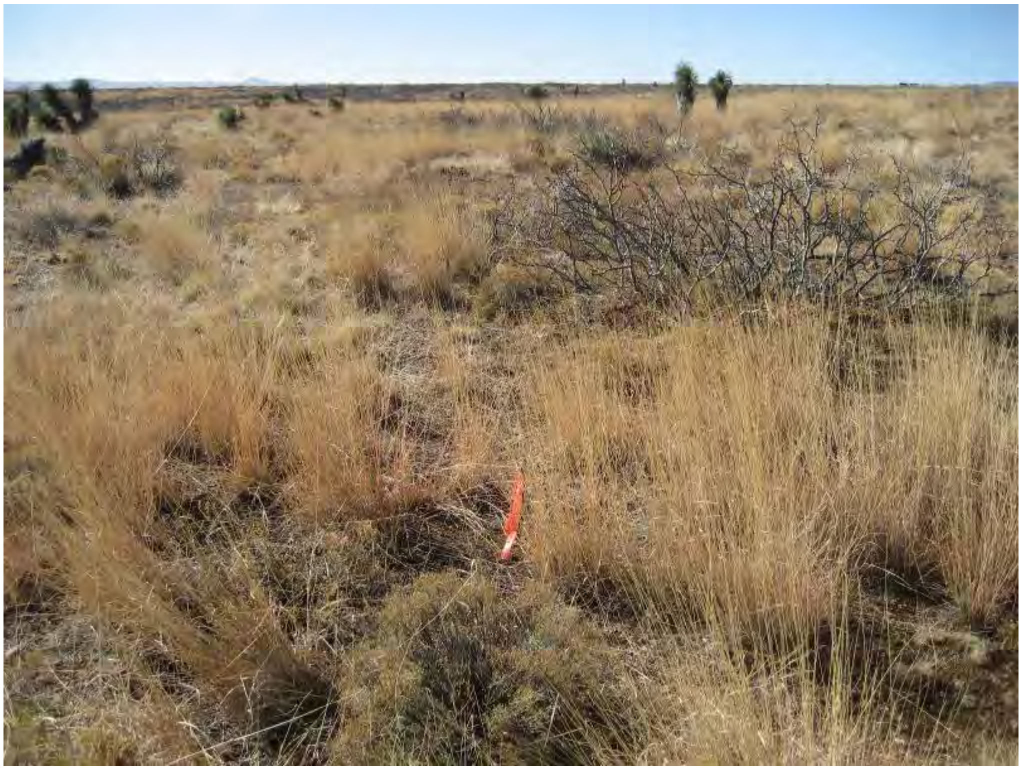


Photo No. 3

Location/Description:
West Amendment Plot
December 2008

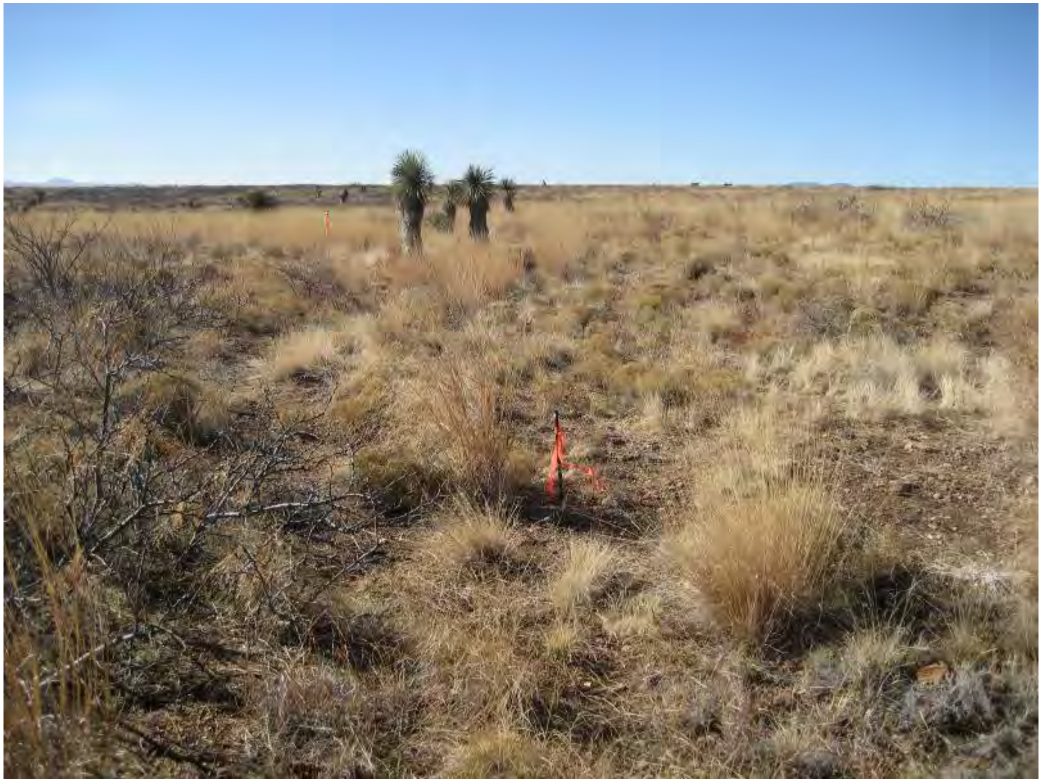


Photo No. 4

Location/Description:
North Reference Plot
December 2008

Photo No.
5

Location/Description:
North Amendment Plot
December 2008

Photo No.
6

Location/Description:
North Amendment Plot
December 2008

Photo No. 7	
Location/Description: Northeast Reference Plot December 2008	

Photo No. 8	
Location/Description: Northeast Amendment Plot December 2008	

Photo No.
9

Location/Description:
East Reference Plot
December 2008

Photo No.
10

Location/Description:
East Amendment Plot
December 2008

Photo No.
11

Location/Description:
East Amendment Plot
December 2008

Photo No.
12

Location/Description:
Northeast Amendment Plot Facing Northeast
October 2009

Photo No.
13

Location/Description:
Northeast Amendment Plot Facing Northeast October 2009

Photo No.
14

Location/Description:
East Amendment Plot Facing East October 2009

Photo No.
15

Location/Description:
East Amendment Plot Facing West October 2009

Photo No.
16

Location/Description:
North Amendment Plot Facing South October 2009

Photo No.
17

Location/Description:
North Amendment Plot Facing West October 2009

Photo No.
18

Location/Description:
West Amendment Plot Facing South October 2009

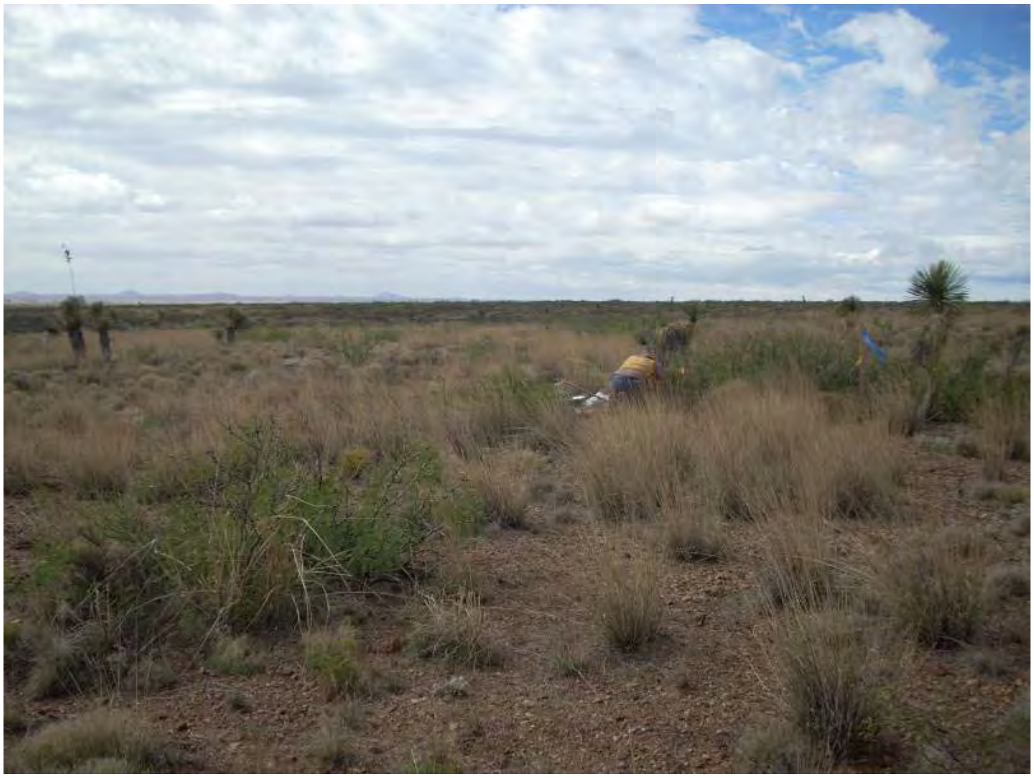


Photo No.
19

Location/Description:
West Amendment Plot
Facing North
October 2009

Photo No.
1

Location/Description:
West Amendment Plot
Facing Southeast
October 2010

Photo No.
2

Location/Description:
West Amendment Plot
Facing West in October
2010

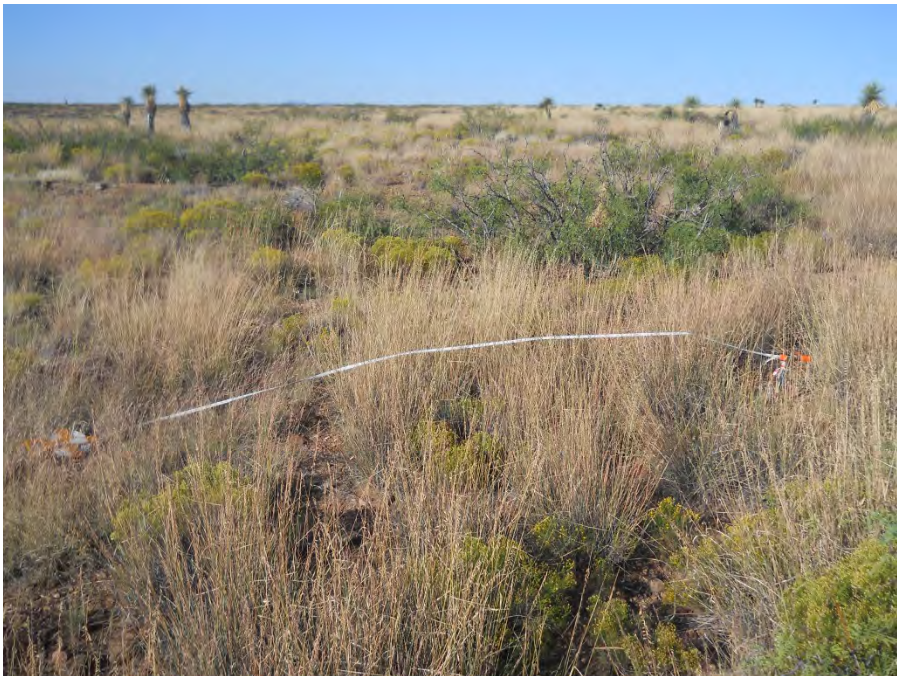


Photo No.
3

Location/Description:
West Amendment Plot Facing East in October 2010

Photo No.
4

Location/Description:
West Reference Plot Facing South in October 2010

Photo No.
5

Location/Description:
North Amendment Plot Facing East in October 2010

Photo No.
6

Location/Description:
North Amendment Plot Facing East in October 2010

Photo No.
7

Location/Description:
North Reference Plot Facing Southwest in April 2010

Photo No.
8

Location/Description:
Northeast Amendment Plot Facing Northeast in October 2010

Photo No.
9

Location/Description:
Northeast Amendment Plot Facing Northeast in October 2010

Photo No.
10

Location/Description:
Northeast Reference Plot Facing Northwest in October 2010

Photo No.
11

Location/Description:
Northeast Study Area
Facing Southwest in
October 2010

Photo No.
12

Location/Description:
East Amendment Plot
Facing Northeast in
October 2010

Photo No.
13

Location/Description:
East Amendment Plot Facing South in October 2010

Photo No.
14

Location/Description:
East Reference Plot Facing East in October 2010

Photo No. **15**	
Location/Description: East Study Area Facing East in October 2010	

Photo No.
1

Location/Description:
North Amendment Plot Facing Northeast in May 2011

Photo No.
2

Location/Description:
North Amendment Plot Facing North in May 2011

Photo No.
3

Location/Description:
North Reference Plot Facing East in May 2011

Photo No.
4

Location/Description:
North Reference Plot Facing Northeast in May 2011

Photo No.
5

Location/Description:
West Amendment Plot Facing South in May 2011

Photo No.
6

Location/Description:
West Amendment Plot Facing East in May 2011

Photo No.
7

Location/Description:
Northeast Amendment Plot Facing Northeast in May 2011

Photo No.
8

Location/Description:
Northeast Amendment Plot Facing Northwest in May 2011

Photo No.
9

Location/Description:
Northeast Reference Plot Facing Northeast in May 2011

Photo No.
10

Location/Description:
Northeast Amendment Plot Facing Northewest in May 2011

Photo No.
11

Location/Description:
West Amendment Plot Facing Southeast in October 2011

Photo No.
12

Location/Description:
West Amendment Plot Facing South in October 2011

Photo No. **13**	
Location/Description: West Reference Plot Facing East in October 2011	

Photo No. **14**	
Location/Description: West Reference Plot Facing East in October 2011	

Photo No.
15

Location/Description:
North Amendment Plot Facing South in October 2011

Photo No.
16

Location/Description:
North Amendment Plot Facing East in October 2011

Photo No. **17**	
Location/Description: North Reference Plot Facing West in October 2011	

Photo No. **18**	
Location/Description: North Reference Plot Facing North in October 2011	

Photo No. 19

Location/Description:
East Amendment Plot Facing North in October 2011

Photo No. 20

Location/Description:
East Amendment Plot Facing West in October 2011

Photo No.
21

Location/Description:
East Reference Plot
Facing North in October 2011

Photo No.
22

Location/Description:
East Reference Plot
Facing South in October 2011

Photo No.
23

Location/Description:
Northeast Amendment Plot Facing North in October 2011

Photo No.
24

Location/Description:
Northeast Amendment Plot Facing South in October 2011

ARCADIS

PHOTOGRAPHIC LOG

Project Name: Year 5 Monitoring Report for STSIU Amendment Study Plots

Dates: April 2012, October 2012

Photo No.
1

Location/Description:
East Amendment Plot
Facing East in April 2012

Photo No.
2

Location/Description:
East Amendment Plot
Facing North in April 2012

Photo No.
25

Location/Description:
Northeast Reference Plot Facing South in October 2011

Photo No.
26

Location/Description:
Northeast Reference Plot Facing South in October 2011

Photo No.
1

Location/Description:
East Amendment Plot
Facing East in April 2012

Photo No.
2

Location/Description:
East Amendment Plot
Facing North in April 2012

Photo No.
3

Location/Description:
East Reference Plot Facing East in April 2012

Photo No.
4

Location/Description:
East Reference Plot Facing North in April 2012

Photo No.
5

Location/Description:
Northeast Amendment Plot Facing Northeast in April 2012

Photo No.
6

Location/Description:
Northeast Amendment Plot Facing Northwest in April 2012

Photo No.
7

Location/Description:
Northeast Amendment Plot Facing Northwest in April 2012

Photo No.
8

Location/Description:
Northeast Reference Plot Facing Northeast in April 2012

Photo No.
9

Location/Description:
North Amendment Plot Facing East in April 2012

Photo No.
10

Location/Description:
North Amendment Plot Facing South in April 2012

Photo No. **11**

Location/Description:
North Reference Plot Facing East in April 2012

Photo No. **12**

Location/Description:
North Reference Plot Facing North in April 2012

Photo No.
13

Location/Description:
West Amendment Plot Facing South in April 2012

Photo No.
14

Location/Description:
West Amendment Plot Facing Southeast in April 2012

Photo No. 15

Location/Description:
West Reference Plot Facing Northeast in April 2012

Photo No. 16

Location/Description:
West Reference Plot Facing Northwest in April 2012

Photo No.
17

Location/Description:
West Amendment Plot Facing Southwest from the Northeast Corner in October 2012

Photo No.
18

Location/Description:
West Reference Plot Facing Southwest from the Northeast Corner in October 2012

Photo No.
19

Location/Description:
North Amendment Plot Facing Southwest from the Northeast Corner in October 2012

Photo No.
20

Location/Description:
North Reference Plot Facing Southwest from the Northeast Corner in October 2012

Photo No. 21

Location/Description:
Northeast Reference Plot Facing Southwest from the Northeast Corner in October 2012

Photo No. 22

Location/Description:
Northeast Amendment Plot Facing Southwest from the Northeast Corner in October 2012

Photo No.
23

Location/Description:
East Amendment Plot Facing Southwest from the Northeast Corner in October 2012

Photo No.
24

Location/Description:
East Reference Plot Facing Southwest from the Northeast Corner

Photo No.
1

Location/Description:
East Amendment Plot Facing Northwest in April 2013.

Photo No.
2

Location/Description:
East Amendment Plot Facing Northeast in April 2013

Photo No. 3

Location/Description:
East Reference Plot Facing Northwest in April 2013

Photo No. 4

Location/Description:
East Reference Plot Facing Southeast in April 2013

Photo No. **5**	
Location/Description: Northeast Amendment Plot Facing North in April 2013	

Photo No. **6**	
Location/Description: Northeast Amendment Plot Facing South in April 2013	

Photo No.
7

Location/Description:
Northeast Amendment Plot Facing North in April 2013

Photo No.
8

Location/Description:
Northeast Reference Plot Facing South in April 2013

Photo No. 9

Location/Description:
North Amendment Plot Facing Southeast in April 2013

Photo No. 10

Location/Description:
North Amendment Plot Facing East in April 2013

Photo No.
11

Location/Description:
North Reference Plot Facing West in April 2013

Photo No.
12

Location/Description:
North Reference Plot Facing North in April 2013

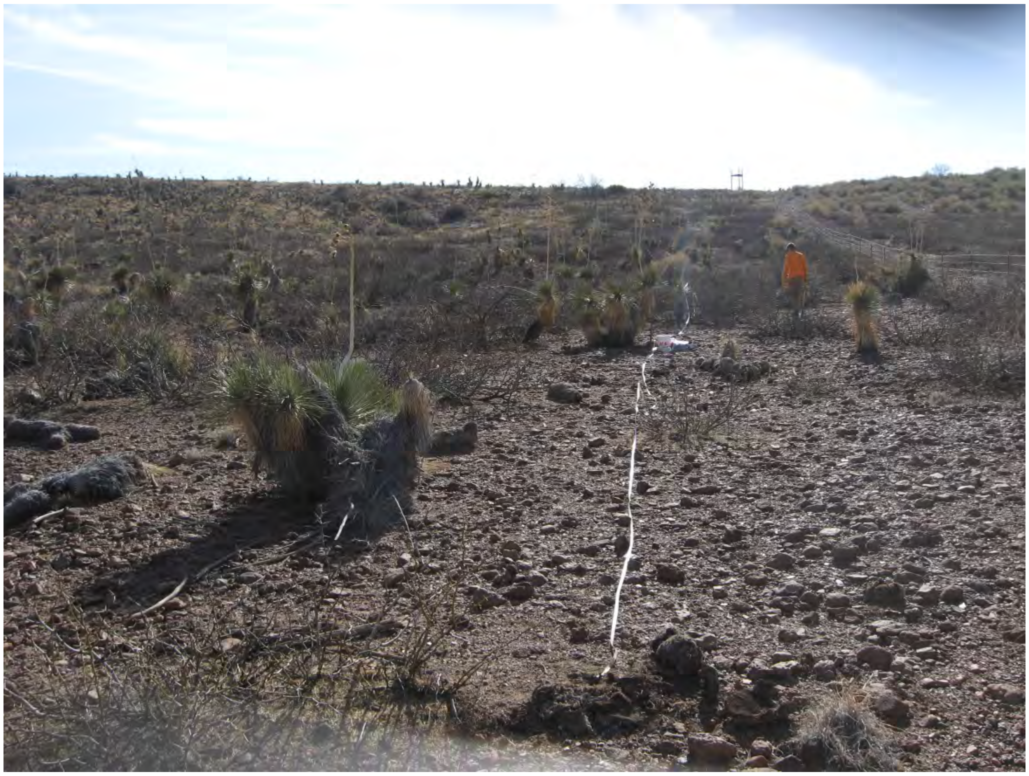


Photo No.
13

Location/Description:
West Amendment Plot Facing Southeast in April 2013

Photo No.
14

Location/Description:
West Amendment Plot Facing southwest in April 2013

Photo No.
15

Location/Description:
West Reference Plot Facing North in April 2013

Photo No.
16

Location/Description:
West Reference Plot Facing East in April 2013

Photo No.
17

Location/Description:
East Amendment Plot Facing East showing plant survey methods in October 2013

Photo No.
18

Location/Description:
East Amendment Plot Showing Plant Growth in October 2013

Photo No.
19

Location/Description:
East Amendment Plot Showing Plant Survey Method in October 2013

Photo No.
20

Location/Description:
East Amendment Plot in October 2013

Photo No.
21

Location/Description:
Northeast Reference Plot Facing North in October 2013

Photo No.
22

Location/Description:
Northeast Reference Plot Facing South in October 2013

Photo No. 23	
Location/Description: Northeast Amendment Plot Facing West in October 2013	

Photo No. 24	
Location/Description: Northeast Amendment Plot Facing South in October 2013	

Photo No.
25

Location/Description:
North Reference Plot Facing North in October 2013

Photo No.
26

Location/Description:
North Reference Plot Facing South in October 2013

Photo No. 27	
Location/Description: North Amendment Plot Facing East in October 2013	

Photo No. 28	
Location/Description: North Amendment Plot Facing West in October 2013	

Photo No.
29

Location/Description:
West Reference Plot Facing North in October 2013

Photo No.
30

Location/Description:
West Reference Plot Facing East in October 2013

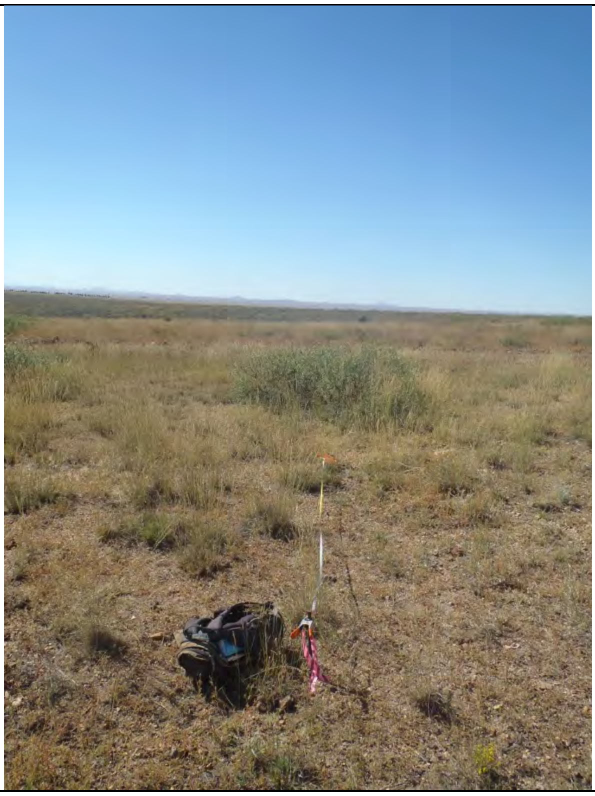


Photo No.
31

Location/Description:
West Amendment Plot Facing North in October 2013

Photo No.
32

Location/Description:
West Amendment Plot Facing South in October 2013

Photo No.
33

Location/Description:
East Reference Plot in October 2013

Photo No. 1

Location:
East Amendment Plot

Description:
Photograph of East Amendment Plot Taken in September 2014 Showing a Reduction in Golden Crownbeard.

Photo No. 2

Location:
North Amendment Plot

Description:
Photograph of North Amendment Plot Taken in September 2014 Showing Reduction in Carelessweed.

Photo No.
3

Location:
North Reference Plot

Description:
Photograph of North Reference Plot Taken in September 2014 Showing More Grass than the North Plot.

Photo No.
4

Location:
West Reference Plot

Description:
Photograph of West Reference Plot Taken in September 2014 Showing Reduced Carelessweed.

Photo No.
5

Location:
West Reference Plot

Description:
Photograph of West Reference Plot Taken in September 2014 Showing Reduced Carelessweed.

Photo No.
6

Location:
ERA2 and Haul Road

Description:
Photograph Taken in September 2014 Showing Abundant Grasses Where the Haul Road was Ripped at ERA 2 (left side of photo).
The Area to Right Has Not Been Ripped and is Mostly Mesquite.

Photo No.
7

Location:
Haul Road

Description:
Photograph Taken in September 2014 Showing Abundant Grasses Where the Haul Road was Ripped.

Photo No.
8

Location:
Northeast Amendment Plot

Description:
Photograph Taken in September 2014 Showing the Northeast Amendment Plot Looking West.

Photo No. 1

Location:
West Reference Plot #1 in September 2016

Photo No. 2

Location:
West Reference Plot #2 in September 2016

Photo No.
3

Location:
West Reference Plot #3
in September 2016

Photo No.
4

Location:
North Reference Plot #1
in September 2016

Photo No.
5

Location:
North Reference Plot #2
in September 2016

Photo No.
6

Location:
North Amendment Plot #1
in September 2016

Photo No.
7

Location:
North Amendment Plot #2 in September 2016

Photo No.
8

Location:
North Amendment Plot #3 in September 2016

Photo No.
9

Site Location:
East Reference Plot #1
in September 2016

Photo No.
10

Site Location:
East Amendment Plot #1
in September 2016

Photo No.
11

Site Location:
East Amendment Plot #2 in September 2016

Photo No.
12

Site Location:
East Amendment Plot #3 in September 2016

Photo No.
13

Site Location:
Northeast Amendment Plot #1 in September 2016

Photo No.
14

Site Location:
Northeast Amendment Plot #2 in September 2016

Photo No. **15**

Site Location:
Northeast Amendment Plot #3 in September 2016

Photo No. **16**

Site Location:
Northeast Amendment Plot #4 in September 2016

Appendix E

Lab Data

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 22, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L11766

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 26, 2013. This project has been assigned to ACZ's project number, L11766. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11766. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 21, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	RINSATE1 (042413)
ACZ Sample ID:	***L11766-01***
Date Sampled:	*04/24/13 12:26*
Date Received:	*04/26/13*
Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS								05/03/13 18:51	las

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	1	0.0013	B		mg/L	0.0005	0.003	05/06/13 22:27	msh

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11766-02***
Sample ID:	RINSATE2 (042513)	Date Sampled:	*04/25/13 08:16*
		Date Received:	*04/26/13*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS								05/03/13 19:03	las

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	1	0.0013	B		mg/L	0.0005	0.003	05/06/13 22:36	msh

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11766-03***
Project ID:	ZN000001M5	Date Sampled:	*04/25/13 08:40*
Sample ID:	RINSATE3 (042513)	Date Received:	*04/26/13*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS								05/03/13 19:15	las

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0005	0.003	05/06/13 22:40	msh

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: RINSATE4 (042513)

ACZ Sample ID: ***L11766-04***
Date Sampled: *04/25/13 10:50*
Date Received: *04/26/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS								05/03/13 19:51	las

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0005	0.003	05/06/13 22:50	msh

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11766***

Copper, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343240													
WG343240ICV	ICV	05/06/13 21:12	MS130416-2	.05		.05037	mg/L	100.7	90	110			
WG343240ICB	ICB	05/06/13 21:16				U	mg/L		-0.0015	0.0015			
WG343155LRB	LRB	05/06/13 21:19				.00076	mg/L		-0.0011	0.0011			
WG343155LFB	LFB	05/06/13 21:23	MS130329-1	.05005		.05089	mg/L	101.7	85	115			
L11766-03LFM	LFM	05/06/13 22:43	MS130329-1	.05005	.0007	.05065	mg/L	99.8	70	130			
L11766-03LFMD	LFMD	05/06/13 22:47	MS130329-1	.05005	.0007	.04928	mg/L	97.1	70	130	2.74	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11766***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11766***

No certification qualifiers associated with this analysis

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11766
Date Received: 04/26/2013 09:54
Received By: gac
Date Printed: 5/22/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		

`A change was made in the line 1 and 2 section prior to ACZ custody.`

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (μR/Hr)	Custody Seal Intact?
NA17488	3.5	14	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L11766

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Total Copper				
~~DUP7~~		~~SO~~	~~1~~	~~x~~	~~x~~	~~x~~					MB
~~DUP8 (042513)~~	~~4.25.13~~	~~SO~~	~~1~~	~~x~~	~~x~~	~~x~~					MB
RINSATE1 (042413)	4.24.13 12:26	W	1				x				
RINSATE2 (042513)	4.25.13 08:16	W	1				x				
RINSATE3 (042513)	4.25.13 08:40	W	1				x				
RINSATE4 (042513)	4.25.13 10:50	W	1				x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500		4.26.13 9:50

L11766 Chain of Custody

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

May 30, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L11852

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 01, 2013. This project has been assigned to ACZ's project number, L11852. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11852. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 29, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-W1 0-6

ACZ Sample ID: ***L11852-01***
Date Sampled: *04/23/13 09:47*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 10:22	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 16:24	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	6850		*	mg/Kg	20	100	05/09/13 11:59	aeb
Copper (1312)	M6010B ICP	1	0.10			mg/L	0.01	0.05	05/15/13 17:12	jjc
Copper, total (3050)	M6010B ICP	101	2370		*	mg/Kg	1	5	05/09/13 11:59	aeb
Potassium, total (3050)	M6010B ICP	101	3260			mg/Kg	30	200	05/09/13 11:59	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/10/13 16:50	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/10/13 16:50	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:04	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.9		*	%	0.1	0.5	05/09/13 16:20	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/03/13 16:00	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 11:50	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/08/13 15:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:00	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 14:41	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 16:14	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.7	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	1.7	B	*	mg/Kg	0.5	3	05/14/13 22:48	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/14/13 22:48	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 0:40	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	191	0.093		*	%	0.002	0.01	05/15/13 23:16	pjb

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-W2 0-6

ACZ Sample ID: ***L11852-02***
Date Sampled: *04/23/13 09:55*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 10:45	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 17:00	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	44600		*	mg/Kg	20	100	05/09/13 12:02	aeb
Copper (1312)	M6010B ICP	1	0.13			mg/L	0.01	0.05	05/15/13 17:21	jjc
Copper, total (3050)	M6010B ICP	101	1850		*	mg/Kg	1	5	05/09/13 12:02	aeb
Potassium, total (3050)	M6010B ICP	101	3210			mg/Kg	30	200	05/09/13 12:02	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.2		*	%	0.1	0.5	05/11/13 0:11	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/11/13 0:11	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:05	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.2		*	%	0.1	0.5	05/09/13 17:50	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/03/13 17:21	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:07	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/08/13 23:09	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:03	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 14:54	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 16:28	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		4.9			mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	4.9		*	mg/Kg	0.5	3	05/14/13 22:50	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/14/13 22:50	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 0:41	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	187	0.101		*	%	0.002	0.01	05/15/13 23:18	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-W3 0-6

ACZ Sample ID: ***L11852-03***
Date Sampled: *04/23/13 10:02*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 11:08	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 17:12	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	5910		*	mg/Kg	20	100	05/09/13 12:05	aeb
Copper (1312)	M6010B ICP	1	0.27			mg/L	0.01	0.05	05/15/13 17:27	jjc
Copper, total (3050)	M6010B ICP	101	3410		*	mg/Kg	1	5	05/09/13 12:05	aeb
Potassium, total (3050)	M6010B ICP	101	3160			mg/Kg	30	200	05/09/13 12:05	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/11/13 3:52	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/11/13 3:52	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.3		*	units	0.1	0.1	05/15/13 13:06	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.3		*	%	0.1	0.5	05/09/13 18:35	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/03/13 18:42	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:24	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 7:18	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:06	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 14:58	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 16:42	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.4	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	1.4	B	*	mg/Kg	0.5	3	05/14/13 22:51	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/14/13 22:51	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 0:43	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	175	0.110		*	%	0.002	0.009	05/15/13 23:20	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11852-04***
Project ID:	ZN000001M5	Date Sampled:	*04/23/13 10:25*
Sample ID:	STS-AMD-2013S-W1 18-24	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 11:19	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 17:23	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	505	158000		*	mg/Kg	100	500	05/13/13 15:16	aeb
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	05/15/13 17:30	jjc
Copper, total (3050)	M6010B ICP	101	259		*	mg/Kg	1	5	05/09/13 12:08	aeb
Potassium, total (3050)	M6010B ICP	101	1790			mg/Kg	30	200	05/09/13 12:08	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	4.9		*	%	0.1	0.5	05/11/13 7:32	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	05/11/13 7:32	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:07	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.7		*	%	0.1	0.5	05/09/13 19:20	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/03/13 20:03	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 15:27	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:09	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:02	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 16:57	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.3			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1.4		*	mg/Kg	0.1	0.5	05/14/13 22:52	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.07	B	*	mg/Kg	0.05	0.3	05/14/13 22:52	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 0:44	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	131	0.040		*	%	0.001	0.007	05/15/13 23:21	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-W2 6-12

ACZ Sample ID: ***L11852-05***
Date Sampled: *04/23/13 10:51*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 11:30	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 17:35	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	37600		*	mg/Kg	20	100	05/09/13 12:11	aeb
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	05/15/13 17:33	jjc
Copper, total (3050)	M6010B ICP	103	222		*	mg/Kg	1	5	05/09/13 12:11	aeb
Potassium, total (3050)	M6010B ICP	103	5030			mg/Kg	30	200	05/09/13 12:11	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.2		*	%	0.1	0.5	05/11/13 11:13	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/11/13 11:13	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 13:08	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	87.0		*	%	0.1	0.5	05/09/13 20:06	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/03/13 21:24	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:57	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 23:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:12	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:07	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 17:11	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.8			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	2.9		*	mg/Kg	0.1	0.5	05/14/13 22:53	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.08	B	*	mg/Kg	0.05	0.3	05/14/13 22:53	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 0:45	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	169	0.142		*	%	0.002	0.009	05/15/13 23:22	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013S-W3 18-24

ACZ Sample ID:	***L11852-06***
Date Sampled:	*04/23/13 10:41*
Date Received:	*05/01/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 11:42	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 17:47	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	505	170000		*	mg/Kg	100	500	05/13/13 15:19	aeb
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	05/15/13 17:43	jjc
Copper, total (3050)	M6010B ICP	101	371		*	mg/Kg	1	5	05/09/13 12:14	aeb
Potassium, total (3050)	M6010B ICP	101	2060			mg/Kg	30	200	05/09/13 12:14	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	5.3		*	%	0.1	0.5	05/11/13 14:53	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	05/11/13 14:53	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:10	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.0		*	%	0.1	0.5	05/09/13 20:51	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/03/13 22:45	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 13:14	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 7:45	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:15	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:11	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 17:25	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.8			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	2.9		*	mg/Kg	0.1	0.5	05/14/13 22:54	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.06	B	*	mg/Kg	0.05	0.3	05/14/13 22:54	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 0:46	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	195	0.033		*	%	0.002	0.01	05/15/13 23:24	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11852-07***
Project ID:	ZN000001M5	Date Sampled:	*04/23/13 11:22*
Sample ID:	STS-AMD-2013S-W4 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 17:59	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.14			mg/L	0.01	0.05	05/15/13 17:46	jjc
Copper, total (3050)	M6010B ICP	101	2060		*	mg/Kg	1	5	05/09/13 12:17	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.4		*	units	0.1	0.1	05/15/13 13:11	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.9		*	%	0.1	0.5	05/09/13 21:36	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 0:06	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 13:31	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 15:54	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:18	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:20	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11852-08***
Sample ID:	STS-AMD-2013S-W5 0-6	Date Sampled:	*04/23/13 11:32*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 18:11	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.29			mg/L	0.01	0.05	05/15/13 17:49	jjc
Copper, total (3050)	M6010B ICP	101	2450		*	mg/Kg	1	5	05/09/13 12:27	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.2		*	units	0.1	0.1	05/15/13 13:12	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.4		*	%	0.1	0.5	05/09/13 22:21	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 1:27	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 13:48	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 0:03	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:22	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:24	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-W6 0-6

ACZ Sample ID: ***L11852-09***
Date Sampled: *04/23/13 11:28*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 18:23	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	05/15/13 17:52	jjc
Copper, total (3050)	M6010B ICP	101	1320		*	mg/Kg	1	5	05/09/13 12:30	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 13:13	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.4		*	%	0.1	0.5	05/09/13 23:07	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 2:48	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 14:04	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 8:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:25	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:28	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11852-10***
Sample ID:	STS-AMD-2013S-W7 0-6	Date Sampled:	*04/23/13 11:37*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 18:34	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.11			mg/L	0.01	0.05	05/15/13 17:55	jjc
Copper, total (3050)	M6010B ICP	101	1630		*	mg/Kg	1	5	05/09/13 12:39	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.4		*	units	0.1	0.1	05/15/13 13:14	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.1		*	%	0.1	0.5	05/09/13 23:52	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 4:09	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 14:55	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 16:21	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:28	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:33	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-W8 0-6

ACZ Sample ID: ***L11852-11***
Date Sampled: *04/23/13 11:39*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 18:46	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.19			mg/L	0.01	0.05	05/15/13 17:58	jjc
Copper, total (3050)	M6010B ICP	101	2300		*	mg/Kg	1	5	05/09/13 12:42	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:16	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.2		*	%	0.1	0.5	05/10/13 0:37	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 5:30	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 15:12	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 0:30	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:31	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:37	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11852-12***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 08:48*
Sample ID:	STS-AMD-2013S-E1 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 11:53	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 18:58	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	5370		*	mg/Kg	20	100	05/09/13 12:45	aeb
Copper (1312)	M6010B ICP	1	0.45			mg/L	0.01	0.05	05/15/13 18:01	jjc
Copper, total (3050)	M6010B ICP	101	1050		*	mg/Kg	1	5	05/09/13 12:45	aeb
Potassium, total (3050)	M6010B ICP	101	4830			mg/Kg	30	200	05/09/13 12:45	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	05/11/13 18:34	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/11/13 18:34	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.9		*	units	0.1	0.1	05/15/13 13:17	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.5		*	%	0.1	0.5	05/10/13 1:22	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 6:51	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 15:28	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 8:39	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:34	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:42	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 17:39	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		53.6			mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	54.0		*	mg/Kg	0.5	3	05/14/13 23:19	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.38		*	mg/Kg	0.05	0.3	05/14/13 22:56	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	1.5	B	*	mg/Kg	0.3	3	05/15/13 0:47	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	167	0.198		*	%	0.002	0.009	05/15/13 23:27	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-E2 0-6

ACZ Sample ID: ***L11852-13***
Date Sampled: *04/24/13 08:55*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 12:04	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 19:10	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	7030		*	mg/Kg	20	100	05/09/13 12:48	aeb
Copper (1312)	M6010B ICP	1	0.10			mg/L	0.01	0.05	05/15/13 18:05	jjc
Copper, total (3050)	M6010B ICP	102	200		*	mg/Kg	1	5	05/09/13 12:48	aeb
Potassium, total (3050)	M6010B ICP	102	7370			mg/Kg	30	200	05/09/13 12:48	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	05/11/13 22:14	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	05/11/13 22:14	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.2		*	units	0.1	0.1	05/15/13 13:18	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	93.5		*	%	0.1	0.5	05/10/13 2:08	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 8:13	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 15:45	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 16:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:37	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:46	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 17:54	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		48.2			mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	48.9		*	mg/Kg	0.5	3	05/14/13 22:57	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	0.7	B	*	mg/Kg	0.3	1	05/14/13 22:57	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 0:48	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	196	0.185		*	%	0.002	0.01	05/15/13 23:28	pjb

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11852-14***
Sample ID:	STS-AMD-2013S-E3 0-6	Date Sampled:	*04/24/13 09:04*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 11:52	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 19:22	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	2790		*	mg/Kg	20	100	05/09/13 12:51	aeb
Copper (1312)	M6010B ICP	1	0.89			mg/L	0.01	0.05	05/15/13 18:08	jjc
Copper, total (3050)	M6010B ICP	101	1080		*	mg/Kg	1	5	05/09/13 12:51	aeb
Potassium, total (3050)	M6010B ICP	101	3260			mg/Kg	30	200	05/09/13 12:51	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/12/13 1:54	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/12/13 1:54	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.4		*	units	0.1	0.1	05/15/13 13:20	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.1		*	%	0.1	0.5	05/10/13 2:53	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 9:34	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:02	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 0:57	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:40	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:50	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 18:08	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		33.1			mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	33.1		*	mg/Kg	0.5	3	05/14/13 23:20	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	05/14/13 23:00	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	5.8		*	mg/Kg	0.3	3	05/15/13 0:52	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	170	0.087	H	*	%	0.002	0.009	05/23/13 13:29	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11852-15***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 10:03*
Sample ID:	STS-AMD-2013S-E1 18-24	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 12:27	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 19:34	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	505	146000		*	mg/Kg	100	500	05/13/13 15:31	aeb
Copper (1312)	M6010B ICP	1	0.04	B		mg/L	0.01	0.05	05/15/13 18:11	jjc
Copper, total (3050)	M6010B ICP	101	180		*	mg/Kg	1	5	05/09/13 12:55	aeb
Potassium, total (3050)	M6010B ICP	101	6020			mg/Kg	30	200	05/09/13 12:55	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	4.7		*	%	0.1	0.5	05/12/13 5:35	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	05/12/13 5:35	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.4		*	units	0.1	0.1	05/15/13 13:21	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	87.0		*	%	0.1	0.5	05/10/13 3:38	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 10:55	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:19	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 9:06	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:44	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:55	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 18:22	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		7.7			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	7.8		*	mg/Kg	0.1	0.5	05/14/13 23:03	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.10	B	*	mg/Kg	0.05	0.3	05/14/13 23:03	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 0:54	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.068		*	%	0.002	0.01	05/15/13 23:29	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-E2 6-12

ACZ Sample ID: ***L11852-16***
Date Sampled: *04/24/13 09:47*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 12:38	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 19:45	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	8160		*	mg/Kg	20	100	05/09/13 13:04	aeb
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	05/15/13 18:20	jjc
Copper, total (3050)	M6010B ICP	103	86		*	mg/Kg	1	5	05/09/13 13:04	aeb
Potassium, total (3050)	M6010B ICP	103	7380			mg/Kg	30	200	05/09/13 13:04	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/12/13 9:15	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/12/13 9:15	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.4		*	units	0.1	0.1	05/15/13 13:22	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	86.1		*	%	0.1	0.5	05/10/13 4:23	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 12:16	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:36	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 17:15	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:47	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 15:59	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 18:37	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		14.3			mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	14.6		*	mg/Kg	0.5	3	05/14/13 23:04	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	0.3	B	*	mg/Kg	0.3	1	05/14/13 23:04	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 0:55	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	194	0.126		*	%	0.002	0.01	05/15/13 23:30	pjb

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-E3 6-12

ACZ Sample ID: ***L11852-17***
Date Sampled: *04/24/13 10:04*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 12:50	lhb
Total Hot Plate Digestion	M3010A ICP								05/14/13 19:57	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	7610		*	mg/Kg	20	100	05/09/13 13:07	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/15/13 18:23	jjc
Copper, total (3050)	M6010B ICP	102	233		*	mg/Kg	1	5	05/09/13 13:07	aeb
Potassium, total (3050)	M6010B ICP	102	6670			mg/Kg	30	200	05/09/13 13:07	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	05/12/13 12:56	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	05/12/13 12:56	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.7		*	units	0.1	0.1	05/15/13 13:23	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	86.5		*	%	0.1	0.5	05/10/13 5:08	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 13:37	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:52	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 1:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:50	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 16:08	cdb
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 18:51	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		6.4			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	6.5		*	mg/Kg	0.1	0.5	05/14/13 23:05	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.09	B	*	mg/Kg	0.05	0.3	05/14/13 23:05	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.3	B	*	mg/Kg	0.3	3	05/15/13 0:56	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	206	0.092		*	%	0.002	0.01	05/15/13 23:31	pjb

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11852-18***
Sample ID:	STS-AMD-2013S-E4 0-6	Date Sampled:	*04/24/13 09:05*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 20:09	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.34			mg/L	0.01	0.05	05/15/13 18:26	jjc
Copper, total (3050)	M6010B ICP	101	800		*	mg/Kg	1	5	05/09/13 13:13	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.1		*	units	0.1	0.1	05/15/13 13:24	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.4		*	%	0.1	0.5	05/10/13 5:54	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 14:58	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 17:09	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 9:33	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:53	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 16:12	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11852-19***
Sample ID:	STS-AMD-2013S-E5 0-6	Date Sampled:	*04/24/13 09:09*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 20:21	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.45			mg/L	0.01	0.05	05/15/13 18:29	jjc
Copper, total (3050)	M6010B ICP	101	626		*	mg/Kg	1	5	05/09/13 13:16	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.0		*	units	0.1	0.1	05/15/13 13:25	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.1		*	%	0.1	0.5	05/10/13 6:39	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 16:19	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 17:26	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 17:42	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:56	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 16:16	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-E6 0-6

ACZ Sample ID: ***L11852-20***
Date Sampled: *04/24/13 09:10*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/14/13 20:33	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.23			mg/L	0.01	0.05	05/15/13 18:32	jjc
Copper, total (3050)	M6010B ICP	101	734		*	mg/Kg	1	5	05/09/13 13:19	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.1		*	units	0.1	0.1	05/15/13 13:26	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.9		*	%	0.1	0.5	05/10/13 7:24	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 17:40	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 17:43	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/15/13 1:51	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 14:59	mjj
Synthetic Precip. Leaching Procedure	M1312								05/09/13 16:21	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343429													
WG343429ICV	ICV	05/09/13 11:34	II130114-4	100		100.03	mg/L	100	90	110			
WG343429ICB	ICB	05/09/13 11:37				U	mg/L		-0.6	0.6			
WG343262PBS	PBS	05/09/13 11:50				U	mg/Kg		-60	60			
WG343262LCSS	LCSS	05/09/13 11:53	PCN42473	7890		8156	mg/Kg		6500	9290			
WG343262LCSSD	LCSSD	05/09/13 11:56	PCN42473	7890		8427	mg/Kg		6500	9290	3.3	20	
L11852-09MS	MS	05/09/13 12:33	II130502-1	6863.87718	7600	16453	mg/Kg	129	75	125			MA
L11852-09MSD	MSD	05/09/13 12:36	II130502-1	6863.87718	7600	15995	mg/Kg	122.3	75	125	2.82	20	
WG343460													
WG343460ICV	ICV	05/13/13 14:51	II130114-4	100		101.15	mg/L	101.2	90	110			
WG343460ICB	ICB	05/13/13 14:54				U	mg/L		-0.6	0.6			
WG343262PBS	PBS	05/13/13 15:07				U	mg/Kg		-60	60			
WG343262LCSS	LCSS	05/13/13 15:10	PCN42473	7890		8438	mg/Kg		6500	9290			
WG343262LCSSD	LCSSD	05/13/13 15:13	PCN42473	7890		9017	mg/Kg		6500	9290	6.6	20	
L11852-09MS	MS	05/13/13 15:25	II130502-1	6863.87718	7990	17408	mg/Kg	137.2	75	125			M1
L11852-09MSD	MSD	05/13/13 15:28	II130502-1	6863.87718	7990	16932	mg/Kg	130.3	75	125	2.77	20	M1

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343483													
WG343483PBS	PBS	05/10/13 9:30				U	%		-0.3	0.3			
WG343483LCSS	LCSS	05/10/13 13:10	PCN42343	4.19		4.3	%		80	120			
L11852-01DUP	DUP	05/10/13 20:31			1.1	1.1	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343483													
WG343483PBS	PBS	05/10/13 9:30				U	%		-0.3	0.3			
L11852-01DUP	DUP	05/10/13 20:31			1.1	1	%				9.5	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343763													
WG343763ICV	ICV	05/15/13 16:50	II130514-1	2		1.926	mg/L	96.3	90	110			
WG343763ICB	ICB	05/15/13 16:53				U	mg/L		-0.03	0.03			
WG343455PBS	PBS	05/15/13 17:06				U	mg/L		-0.03	0.03			
WG343455LFB	LFB	05/15/13 17:09	II130502-1	.5		.499	mg/L	99.8	85	115			
L11852-01MS	MS	05/15/13 17:15	II130502-1	.5	.1	.587	mg/L	97.4	75	125			
L11852-01MSD	MSD	05/15/13 17:18	II130502-1	.5	.1	.592	mg/L	98.4	75	125	0.85	20	
L11852-20DUP	DUP	05/15/13 18:36			.23	.262	mg/L				13	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343429													
WG343429ICV	ICV	05/09/13 11:34	II130114-4	2		1.961	mg/L	98.1	90	110			
WG343429ICB	ICB	05/09/13 11:37				U	mg/L		-0.03	0.03			
WG343262PBS	PBS	05/09/13 11:50				U	mg/Kg		-3	3			
WG343262LCSS	LCSS	05/09/13 11:53	PCN42473	162		157.6	mg/Kg		135	190			
WG343262LCSSD	LCSSD	05/09/13 11:56	PCN42473	162		163.3	mg/Kg		135	190	3.6	20	
L11852-09MS	MS	05/09/13 12:33	II130502-1	50.5	1320	1582.4	mg/Kg	519.6	75	125			M3
L11852-09MSD	MSD	05/09/13 12:36	II130502-1	50.5	1320	1487.1	mg/Kg	330.9	75	125	6.21	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343692													
WG343692ICV	ICV	05/14/13 18:50	WI130411-3	2.416		2.404	mg/L	99.5	90	110			
WG343692ICB	ICB	05/14/13 18:51				U	mg/L		-0.06	0.06			
WG343695													
WG343695LFB	LFB	05/14/13 22:46	WI130215-3	2		2.014	mg/Kg	100.7	90	110			
WG343418PBS	PBS	05/14/13 22:47				U	mg/Kg		-0.3	0.3			
L11854-18DUP	DUP	05/14/13 23:18			9.3	9.3	mg/Kg				0	20	
L11852-14AS	AS	05/14/13 23:22	WI130215-3	50	33.1	78.4	mg/Kg	90.6	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343692													
WG343692ICV	ICV	05/14/13 18:50	WI130411-3	.609		.599	mg/L	98.4	90	110			
WG343692ICB	ICB	05/14/13 18:51				U	mg/L		-0.03	0.03			
WG343695													
WG343695LFB	LFB	05/14/13 22:46	WI130215-3	1		.991	mg/Kg	99.1	90	110			
WG343418PBS	PBS	05/14/13 22:47				U	mg/Kg		-0.15	0.15			
L11852-14AS	AS	05/14/13 23:01	WI130215-3	5	U	4.465	mg/Kg	89.3	90	110			M2
L11854-18DUP	DUP	05/14/13 23:18			U	U	mg/Kg				0	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343700													
WG343700ICV	ICV	05/15/13 0:36	WI121105-5	1.003		1.008	mg/L	100.5	90	110			
WG343700ICB	ICB	05/15/13 0:37				U	mg/L		-0.15	0.15			
WG343700LFB	LFB	05/15/13 0:38	WI121218-3	1		1.041	mg/L	104.1	90	110			
WG343418PBS	PBS	05/15/13 0:39				U	mg/Kg		-0.9	0.9			
L11852-14MS	MS	05/15/13 0:53	NH35X	25	5.8	10.91	mg/Kg	102.2	75	125			
L11854-18DUP	DUP	05/15/13 1:08			U	U	mg/Kg				0	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343775													
WG343775ICV	ICV	05/15/13 23:11	WI130424-3	4		4	mg/L	100	90	110			
WG343775ICB	ICB	05/15/13 23:12				.2	mg/L		-0.3	0.3			
WG343634PBS1	PBS	05/15/13 23:13				.0048	%		-0.006	0.006			
WG343634LFB1	LFB	05/15/13 23:15	WI130424-2	2.5		2.42	%	96.8	85	115			
L11852-01MS	MS	05/15/13 23:17	WI130424-2	.045	.093	.1181	%	55.8	75	125			M2
L11852-02DUP	DUP	05/15/13 23:19			.101	.0833	%				19.2	20	
WG343634PBS2	PBS	05/15/13 23:44				U	%		-0.006	0.006			
L11853-17DUP	DUP	05/15/13 23:49			.127	.0981	%				25.7	20	RD
WG343634LFB2	LFB	05/16/13 0:02	WI130424-2	2.5		2.35	%	94	85	115			
L11853-16MS	MS	05/16/13 0:04	WI130424-2	.045	.138	.167	%	64.4	75	125			M2
WG344213													
WG344213ICV	ICV	05/23/13 12:09	WI130520-1	4		4.15	mg/L	103.8	90	110			
WG344213ICB	ICB	05/23/13 12:10				U	mg/L		-0.3	0.3			
WG344141PBS	PBS	05/23/13 12:15				.0047	%		-0.006	0.006			
WG344141LFB	LFB	05/23/13 12:16	WI130424-2	2.5		2.41	%	96.4	85	115			
L11855-05MS	MS	05/23/13 13:11	WI130424-2	.0325	.099	.1327	%	103.7	75	125			
L11855-06DUP	DUP	05/23/13 13:13			.076	.075	%				1.3	20	

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343594													
WG343594ICV	ICV	05/15/13 13:03	PCN40669	4		3.96	units	99	97	103			
L11852-20DUP	DUP	05/15/13 13:29			7.1	7.09	units				0.1	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343429													
WG343429ICV	ICV	05/09/13 11:34	II130114-4	20		20.04	mg/L	100.2	90	110			
WG343429ICB	ICB	05/09/13 11:37				U	mg/L		-0.9	0.9			
WG343262PBS	PBS	05/09/13 11:50				U	mg/Kg		-90	90			
WG343262LCSS	LCSS	05/09/13 11:53	PCN42473	2600		2949	mg/Kg		1720	3470			
WG343262LCSSD	LCSSD	05/09/13 11:56	PCN42473	2600		3079	mg/Kg		1720	3470	4.3	20	
L11852-09MS	MS	05/09/13 12:33	II130502-1	10097.13261	2860	13822	mg/Kg	108.6	75	125			
L11852-09MSD	MSD	05/09/13 12:36	II130502-1	10097.13261	2860	13790	mg/Kg	108.2	75	125	0.23	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343469													
L11852-01DUP	DUP	05/09/13 17:05			97.9	97.99	%				0.1	20	
WG343469PBS	PBS	05/10/13 8:09				U	%		99.9	100.1			

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company ACZ Project ID: ***L11852***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-01	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-02	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-03	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-04	WG343460	Calcium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11852***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-05	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-06	WG343460	Calcium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L11852-07	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11852-08	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11852-09	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11852-10	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11852-11	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11852***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-12	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-13	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-14	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-15	WG343460	Calcium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-16	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11852-17	WG343429	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L11852-18	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11852-19	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11852-20	WG343429	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11852
Date Received: 05/01/2013 08:52
Received By: ksj
Date Printed: 5/22/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

A change was made in the date/time page 2 section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2599	11.8	16	Yes
2932	11.9	14	Yes
3176	8.9	12	Yes
3574	11	15	Yes
3921	13.3	16	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11852
Date Received: 05/01/2013 08:52
Received By: ksj
Date Printed: 5/22/2013

ACZ Laboratories, Inc.

L11852

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L11852 Chain of Custody

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

me: Pam Pinson
mpany: Chino Mines Company
nail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

ample(s) received past holding time (HT), or if insufficient HT remains to complete alysis before expiration, shall ACZ proceed with requested short HT analyses? NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" ndicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified. YES ☒ NO ☐

samples for CO DW Compliance Monitoring? es, please include state forms. Results will be reported to PQL. YES ☐ NO ☒

OJECT INFORMATION — **ANALYSES REQUESTED** (attach list or use quote number)

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-W1 0-6	04/23/2013 09:47	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-W2 0-6	04/23/2013 09:55	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-W3 0-6	10:02	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-W1 18-24	10:25	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-W2 6-12	10:51	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-W3 18-24	10:41	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-W4 0-6	11:22	SO	1	x	x	x					
STS-AMD-2013S-W5 0-6	11:32	SO	1	x	x	x					
STS-AMD-2013S-W6 0-6	11:28	SO	1	x	x	x					
STS-AMD-2013S-W7 0-6	11:37	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY	DATE:TIME
	4.25.13 1500		
		5-1-13	8:50

1/11

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L11852

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-W8 0-6	04/23/2013 11:29	SO	1	x	x	x					
STS-AMD-2013S-E1 0-6	4.24.13 08:48	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-E2 0-6	4.24.13 08:55	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-E3 0-6	4.24.13 09:04	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-E1 18-24	4.24.13 10:03	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-E2 6-12	4.24.13 09:47	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-E3 6-12	4.24.13 [illegible]:04	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-E4 0-6	4.24.13 09:05	SO	1	x	x	x					
STS-AMD-2013S-E5 0-6	4.24.13 09:09	SO	1	x	x	x					
STS-AMD-2013S-E6 0-6	4.24.13 09:10 ~~11:28~~	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500		
		LNC	5.1.13 8:50

2/11

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 22, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L11853

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 01, 2013. This project has been assigned to ACZ's project number, L11853. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11853. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 21, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-01***
Sample ID:	STS-AMD-2013S-E7 0-6	Date Sampled:	*04/24/13 09:17*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 13:25	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.33			mg/L	0.01	0.05	05/17/13 13:35	jjc
Copper, total (3050)	M6010B ICP	100	1140		*	mg/Kg	1	5	05/09/13 14:15	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.9		*	units	0.1	0.1	05/15/13 13:34	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.7		*	%	0.1	0.5	05/14/13 17:36	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 19:01	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 11:50	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/08/13 15:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:00	mjj
Synthetic Precip. Leaching Procedure	M1312								05/14/13 19:26	cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-02***
Sample ID:	STS-AMD-2013S-E8 0-6	Date Sampled:	*04/24/13 09:16*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 14:01	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.35			mg/L	0.01	0.05	05/17/13 13:44	jjc
Copper, total (3050)	M6010B ICP	100	812		*	mg/Kg	1	5	05/09/13 14:18	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.7		*	units	0.1	0.1	05/15/13 13:35	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.2		*	%	0.1	0.5	05/14/13 19:08	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 20:22	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:07	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/08/13 23:09	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:03	mjj
Synthetic Precip. Leaching Procedure	M1312								05/14/13 21:54	cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N1 0-6

ACZ Sample ID: ***L11853-03***
Date Sampled: *04/24/13 15:10*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 13:01	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 14:13	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	100	8920			mg/Kg	20	100	05/09/13 14:21	aeb
Copper (1312)	M6010B ICP	1	0.24			mg/L	0.01	0.05	05/17/13 13:47	jjc
Copper, total (3050)	M6010B ICP	100	934		*	mg/Kg	1	5	05/09/13 14:21	aeb
Potassium, total (3050)	M6010B ICP	100	3730			mg/Kg	30	200	05/09/13 14:21	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	05/10/13 16:25	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	05/10/13 16:25	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.4		*	units	0.1	0.1	05/15/13 13:36	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.7		*	%	0.1	0.5	05/14/13 19:54	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 21:43	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:24	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 7:18	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:06	mjj
Synthetic Precip. Leaching Procedure	M1312								05/14/13 22:43	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 9:19	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		13.1			mg/Kg	0.5	3	05/22/13 11:34	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	13.1		*	mg/Kg	0.5	3	05/09/13 22:57	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 22:57	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	32		*	mg/Kg	1	10	05/11/13 16:38	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.016	0.122		*	%	0.002	0.008	05/15/13 23:33	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-04***
Sample ID:	STS-AMD-2013S-N2 0-6	Date Sampled:	*04/24/13 15:14*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 13:12	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 14:25	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	9330			mg/Kg	20	100	05/09/13 14:24	aeb
Copper (1312)	M6010B ICP	1	0.29			mg/L	0.01	0.05	05/17/13 13:53	jjc
Copper, total (3050)	M6010B ICP	101	536		*	mg/Kg	1	5	05/09/13 14:24	aeb
Potassium, total (3050)	M6010B ICP	101	4050			mg/Kg	30	200	05/09/13 14:24	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	05/10/13 23:51	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/10/13 23:51	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.8		*	units	0.1	0.1	05/15/13 13:37	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.1		*	%	0.1	0.5	05/14/13 20:40	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/04/13 23:04	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 15:27	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:09	mjj
Synthetic Precip. Leaching Procedure	M1312								05/14/13 23:32	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 9:38	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		17.9			mg/Kg	0.5	3	05/22/13 11:34	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	18.2		*	mg/Kg	0.5	3	05/09/13 22:59	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	0.3	B	*	mg/Kg	0.3	1	05/09/13 22:59	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	14		*	mg/Kg	1	10	05/11/13 16:40	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.019	0.137		*	%	0.002	0.01	05/15/13 23:34	pjb

* Please refer to Qualifier Reports for details.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N3 0-6

ACZ Sample ID: ***L11853-05***
Date Sampled: *04/24/13 15:19*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 13:24	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 14:38	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	9780			mg/Kg	20	100	05/09/13 14:28	aeb
Copper (1312)	M6010B ICP	1	0.39			mg/L	0.01	0.05	05/17/13 13:56	jjc
Copper, total (3050)	M6010B ICP	101	958		*	mg/Kg	1	5	05/09/13 14:28	aeb
Potassium, total (3050)	M6010B ICP	101	3800			mg/Kg	30	200	05/09/13 14:28	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	05/11/13 3:34	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	05/11/13 3:34	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.8		*	units	0.1	0.1	05/15/13 13:38	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	05/14/13 21:27	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 0:26	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 12:57	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 23:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:12	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 0:22	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 9:57	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		23.0			mg/Kg	0.5	3	05/22/13 11:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	23.0		*	mg/Kg	0.5	3	05/09/13 23:00	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:00	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	05/11/13 16:41	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.015	0.121		*	%	0.002	0.008	05/15/13 23:35	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-06***
Sample ID:	STS-AMD-2013S-N1 12-18	Date Sampled:	*04/24/13 15:59*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 13:35	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 14:50	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	8740			mg/Kg	20	100	05/09/13 14:31	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/17/13 14:06	jjc
Copper, total (3050)	M6010B ICP	101	161		*	mg/Kg	1	5	05/09/13 14:31	aeb
Potassium, total (3050)	M6010B ICP	101	3770			mg/Kg	30	200	05/09/13 14:31	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/11/13 7:17	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/11/13 7:17	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.0		*	units	0.1	0.1	05/15/13 13:40	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	90.7		*	%	0.1	0.5	05/14/13 22:13	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 1:47	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 13:14	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 7:45	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:15	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 1:11	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 10:17	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		5.3			mg/Kg	0.5	3	05/22/13 11:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	5.3		*	mg/Kg	0.5	3	05/09/13 23:01	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:01	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	45		*	mg/Kg	1	10	05/11/13 16:43	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.018	0.103		*	%	0.002	0.009	05/15/13 23:36	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N2 12-18

ACZ Sample ID: ***L11853-07***
Date Sampled: *04/24/13 15:45*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 13:47	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 15:02	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	10100			mg/Kg	20	100	05/09/13 14:34	aeb
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	05/17/13 14:09	jjc
Copper, total (3050)	M6010B ICP	101	219		*	mg/Kg	1	5	05/09/13 14:34	aeb
Potassium, total (3050)	M6010B ICP	101	3760			mg/Kg	30	200	05/09/13 14:34	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/11/13 11:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/11/13 11:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.0		*	units	0.1	0.1	05/15/13 13:41	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	91.2		*	%	0.1	0.5	05/14/13 22:59	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 3:08	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 13:31	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 15:54	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:18	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 2:50	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 10:36	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		7.4			mg/Kg	0.5	3	05/22/13 11:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	7.4		*	mg/Kg	0.5	3	05/09/13 23:03	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:03	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.5	B	*	mg/Kg	0.3	3	05/11/13 16:44	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.016	0.102		*	%	0.002	0.008	05/15/13 23:37	pjb

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N3 12-18

ACZ Sample ID: ***L11853-08***
Date Sampled: *04/24/13 16:04*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 13:58	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 15:14	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	10400			mg/Kg	20	100	05/09/13 14:43	aeb
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	05/17/13 14:12	jjc
Copper, total (3050)	M6010B ICP	101	477		*	mg/Kg	1	5	05/09/13 14:43	aeb
Potassium, total (3050)	M6010B ICP	101	3260			mg/Kg	30	200	05/09/13 14:43	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	05/11/13 14:43	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/11/13 14:43	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.8		*	units	0.1	0.1	05/15/13 13:42	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	90.3		*	%	0.1	0.5	05/14/13 23:45	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 4:29	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 13:48	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 0:03	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:22	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 3:39	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 10:55	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		20.0			mg/Kg	0.5	3	05/22/13 11:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	20.0		*	mg/Kg	0.5	3	05/09/13 23:04	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:04	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.5	B	*	mg/Kg	0.3	3	05/11/13 16:45	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.02	0.136		*	%	0.002	0.01	05/15/13 23:40	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N4 0-6

ACZ Sample ID: ***L11853-09***
Date Sampled: *04/24/13 15:35*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 15:26	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.70			mg/L	0.01	0.05	05/17/13 14:15	jjc
Copper, total (3050)	M6010B ICP	100	1010		*	mg/Kg	1	5	05/09/13 14:46	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.2		*	units	0.1	0.1	05/15/13 13:43	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.9		*	%	0.1	0.5	05/15/13 0:31	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 5:50	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 14:04	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 8:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:25	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 4:28	cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N5 0-6

ACZ Sample ID: ***L11853-10***
Date Sampled: *04/24/13 15:27*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 15:38	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.51			mg/L	0.01	0.05	05/17/13 14:18	jjc
Copper, total (3050)	M6010B ICP	101	1260		*	mg/Kg	1	5	05/09/13 14:56	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.4		*	units	0.1	0.1	05/15/13 13:44	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.3		*	%	0.1	0.5	05/15/13 1:18	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 7:11	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 14:55	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 16:21	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:28	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 5:18	cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-N6 0-6

ACZ Sample ID: ***L11853-11***
Date Sampled: *04/24/13 15:26*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 15:50	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.25			mg/L	0.01	0.05	05/17/13 14:21	jjc
Copper, total (3050)	M6010B ICP	101	1280		*	mg/Kg	1	5	05/09/13 14:59	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.7		*	units	0.1	0.1	05/15/13 13:46	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.1		*	%	0.1	0.5	05/15/13 2:04	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 8:32	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 15:12	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 0:30	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:31	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 6:07	cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11853-12***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 15:21*
Sample ID:	STS-AMD-2013S-N7 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 16:03	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.16			mg/L	0.01	0.05	05/17/13 14:24	jjc
Copper, total (3050)	M6010B ICP	101	334		*	mg/Kg	1	5	05/09/13 15:02	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.3		*	units	0.1	0.1	05/15/13 13:47	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.8		*	%	0.1	0.5	05/15/13 2:50	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 9:53	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 15:28	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 8:39	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:34	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 6:57	cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11853-13***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 15:24*
Sample ID:	STS-AMD-2013S-N8 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 16:15	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.23			mg/L	0.01	0.05	05/17/13 14:27	jjc
Copper, total (3050)	M6010B ICP	101	596		*	mg/Kg	1	5	05/09/13 15:05	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.4		*	units	0.1	0.1	05/15/13 13:48	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	05/15/13 3:36	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 11:14	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 15:45	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 16:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:37	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 7:46	cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-14***
Sample ID:	STS-AMD-2013S-NE1 0-6	Date Sampled:	*04/25/13 08:33*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 14:09	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 16:27	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	5360			mg/Kg	20	100	05/09/13 15:11	aeb
Copper (1312)	M6010B ICP	1	1.73			mg/L	0.01	0.05	05/17/13 14:30	jjc
Copper, total (3050)	M6010B ICP	101	4090		*	mg/Kg	1	5	05/09/13 15:11	aeb
Potassium, total (3050)	M6010B ICP	101	3880			mg/Kg	30	200	05/09/13 15:11	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.5		*	%	0.1	0.5	05/11/13 18:26	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.0		*	%	0.1	0.5	05/11/13 18:26	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.8		*	units	0.1	0.1	05/15/13 13:50	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.9		*	%	0.1	0.5	05/15/13 4:22	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 12:35	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:02	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 0:57	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:40	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 8:35	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 11:14	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		37.4			mg/Kg	0.4	2	05/22/13 11:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	20	37.5		*	mg/Kg	0.4	2	05/09/13 23:39	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.07	B	*	mg/Kg	0.05	0.3	05/09/13 23:05	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	15.5		*	mg/Kg	0.3	3	05/11/13 16:46	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.016	0.237		*	%	0.002	0.008	05/15/13 23:42	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-15***
Sample ID:	STS-AMD-2013S-NE2 0-6	Date Sampled:	*04/25/13 08:25*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 14:21	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 16:39	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	9320			mg/Kg	20	100	05/09/13 15:20	aeb
Copper (1312)	M6010B ICP	1	0.37			mg/L	0.01	0.05	05/17/13 14:33	jjc
Copper, total (3050)	M6010B ICP	101	3840		*	mg/Kg	1	5	05/09/13 15:20	aeb
Potassium, total (3050)	M6010B ICP	101	4980			mg/Kg	30	200	05/09/13 15:20	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.9		*	%	0.1	0.5	05/11/13 22:09	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	3.1		*	%	0.1	0.5	05/11/13 22:09	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.8		*	units	0.1	0.1	05/15/13 13:51	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.1		*	%	0.1	0.5	05/15/13 5:08	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 13:56	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:19	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 9:06	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:44	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 9:25	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 11:34	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		26.5			mg/Kg	0.3	2	05/22/13 11:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	15	26.8		*	mg/Kg	0.3	2	05/09/13 23:40	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.27	B	*	mg/Kg	0.05	0.3	05/09/13 23:08	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	1.3	B	*	mg/Kg	0.3	3	05/11/13 16:49	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.021	0.327		*	%	0.002	0.01	05/15/13 23:43	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-16***
Sample ID:	STS-AMD-2013S-NE3 0-6	Date Sampled:	*04/25/13 08:47*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 14:55	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 16:51	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	5860			mg/Kg	20	100	05/09/13 15:23	aeb
Copper (1312)	M6010B ICP	1	0.51			mg/L	0.01	0.05	05/17/13 14:43	jjc
Copper, total (3050)	M6010B ICP	101	2010		*	mg/Kg	1	5	05/09/13 15:23	aeb
Potassium, total (3050)	M6010B ICP	101	4080			mg/Kg	30	200	05/09/13 15:23	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	05/12/13 1:52	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	05/12/13 1:52	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.3		*	units	0.1	0.1	05/15/13 13:52	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.2		*	%	0.1	0.5	05/15/13 5:55	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 15:17	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:36	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 17:15	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:47	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 10:14	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 11:53	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		8.1			mg/Kg	0.5	3	05/22/13 11:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	8.1		*	mg/Kg	0.5	3	05/09/13 23:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:10	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 16:50	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.015	0.138		*	%	0.002	0.008	05/16/13 0:03	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NE1 6-12

ACZ Sample ID: ***L11853-17***
Date Sampled: *04/25/13 09:36*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 15:17	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 17:03	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	7370			mg/Kg	20	100	05/09/13 15:27	aeb
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	05/17/13 14:46	jjc
Copper, total (3050)	M6010B ICP	103	817		*	mg/Kg	1	5	05/09/13 15:27	aeb
Potassium, total (3050)	M6010B ICP	103	4340			mg/Kg	30	200	05/09/13 15:27	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/12/13 5:35	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/12/13 5:35	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.5		*	units	0.1	0.1	05/15/13 13:53	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	86.6		*	%	0.1	0.5	05/15/13 6:41	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 16:39	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 16:52	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 1:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:50	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 11:53	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 12:12	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		5.1			mg/Kg	0.1	0.5	05/22/13 11:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	5.2		*	mg/Kg	0.1	0.5	05/09/13 23:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.14	B	*	mg/Kg	0.05	0.3	05/09/13 23:11	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	3	B	*	mg/Kg	1	10	05/11/13 16:51	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.017	0.127		*	%	0.002	0.009	05/15/13 23:48	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-18***
Sample ID:	STS-AMD-2013S-NE2 18-24	Date Sampled:	*04/25/13 09:26*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 15:40	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 17:15	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	17800			mg/Kg	20	100	05/09/13 15:30	aeb
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	05/17/13 14:49	jjc
Copper, total (3050)	M6010B ICP	103	362		*	mg/Kg	1	5	05/09/13 15:30	aeb
Potassium, total (3050)	M6010B ICP	103	4320			mg/Kg	30	200	05/09/13 15:30	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/12/13 9:18	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/12/13 9:18	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:54	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	87.3		*	%	0.1	0.5	05/15/13 7:27	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 18:00	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 17:09	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 9:33	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:53	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 12:42	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 12:32	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.3			mg/Kg	0.1	0.5	05/22/13 11:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.4		*	mg/Kg	0.1	0.5	05/09/13 23:12	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.09	B	*	mg/Kg	0.05	0.3	05/09/13 23:12	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	05/11/13 16:53	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.014	0.068		*	%	0.001	0.007	05/15/13 23:51	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NE3 6-12

ACZ Sample ID: ***L11853-19***
Date Sampled: *04/25/13 09:39*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 15:51	lhb
Total Hot Plate Digestion	M3010A ICP								05/16/13 17:27	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	8090			mg/Kg	20	100	05/09/13 15:33	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/17/13 14:52	jjc
Copper, total (3050)	M6010B ICP	103	110		*	mg/Kg	1	5	05/09/13 15:33	aeb
Potassium, total (3050)	M6010B ICP	103	3210			mg/Kg	30	200	05/09/13 15:33	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/12/13 13:01	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.0		*	%	0.1	0.5	05/12/13 13:01	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.6		*	units	0.1	0.1	05/15/13 13:55	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	87.3		*	%	0.1	0.5	05/15/13 8:13	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 19:21	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 17:26	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 17:42	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:56	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 13:31	cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 12:51	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.2	B		mg/Kg	0.5	3	05/22/13 11:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	2.2	B	*	mg/Kg	0.5	3	05/09/13 23:14	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:14	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 16:54	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.012	0.119		*	%	0.001	0.006	05/15/13 23:54	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11853-20***
Sample ID:	STS-AMD-2013S-NE4 0-6	Date Sampled:	*04/25/13 08:27*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/16/13 17:40	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.67			mg/L	0.01	0.05	05/17/13 14:55	jjc
Copper, total (3050)	M6010B ICP	102	2930		*	mg/Kg	1	5	05/09/13 15:36	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 13:56	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.3		*	%	0.1	0.5	05/15/13 8:59	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 20:42	mjj
Digestion - Hot Plate	M3050B ICP								05/07/13 17:43	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/15/13 1:51	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/06/13 16:59	mjj
Synthetic Precip. Leaching Procedure	M1312								05/15/13 14:21	cra

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

WG343436

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343436ICV	ICV	05/09/13 13:50	II130114-4	100		99.88	mg/L	99.9	90	110			
WG343436ICB	ICB	05/09/13 13:53				U	mg/L		-0.6	0.6			
WG343263PBS	PBS	05/09/13 14:06				U	mg/Kg		-60	60			
WG343263LCSS	LCSS	05/09/13 14:09	PCN42473	7890		8208	mg/Kg		6500	9290			
WG343263LCSSD	LCSSD	05/09/13 14:12	PCN42473	7890		8401	mg/Kg		6500	9290	2.3	20	
L11853-09MS	MS	05/09/13 14:49	II130502-1	6795.918	11900	18411	mg/Kg	95.8	75	125			
L11853-09MSD	MSD	05/09/13 14:53	II130502-1	6795.918	11900	18821	mg/Kg	101.8	75	125	2.2	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

WG343484

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343484PBS	PBS	05/10/13 9:00				U	%		-0.3	0.3			
WG343484LCSS	LCSS	05/10/13 12:42	PCN42343	4.19		4.2	%		80	120			
L11853-03DUP	DUP	05/10/13 20:08			1.4	1.4	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

WG343484

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343484PBS	PBS	05/10/13 9:00				U	%		-0.3	0.3			
L11853-03DUP	DUP	05/10/13 20:08			1.4	1.3	%				7.4	20	ZQ

Copper (1312) M6010B ICP

WG343878

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343878ICV	ICV	05/17/13 13:14	II130514-1	2		1.962	mg/L	98.1	90	110			
WG343878ICB	ICB	05/17/13 13:17				U	mg/L		-0.03	0.03			
WG343675PBS	PBS	05/17/13 13:29				U	mg/L		-0.03	0.03			
WG343675LFB	LFB	05/17/13 13:32	II130502-1	.5		.49	mg/L	98	85	115			
L11853-01MS	MS	05/17/13 13:38	II130502-1	.5	.33	.816	mg/L	97.2	75	125			
L11853-01MSD	MSD	05/17/13 13:41	II130502-1	.5	.33	.814	mg/L	96.8	75	125	0.25	20	
L11853-20DUP	DUP	05/17/13 14:58			.67	.778	mg/L				14.9	20	

Copper, total (3050) M6010B ICP

WG343436

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343436ICV	ICV	05/09/13 13:50	II130114-4	2		1.949	mg/L	97.5	90	110			
WG343436ICB	ICB	05/09/13 13:53				U	mg/L		-0.03	0.03			
WG343263PBS	PBS	05/09/13 14:06				U	mg/Kg		-3	3			
WG343263LCSS	LCSS	05/09/13 14:09	PCN42473	162		156.8	mg/Kg		135	190			
WG343263LCSSD	LCSSD	05/09/13 14:12	PCN42473	162		162.2	mg/Kg		135	190	3.4	20	
L11853-09MS	MS	05/09/13 14:49	II130502-1	50	1010	1094.8	mg/Kg	169.6	75	125			M3
L11853-09MSD	MSD	05/09/13 14:53	II130502-1	50	1010	1033.5	mg/Kg	47	75	125	5.76	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343476													
WG343476ICV	ICV	05/09/13 19:09	WI130411-3	2.416		2.334	mg/L	96.6	90	110			
WG343476ICB	ICB	05/09/13 19:10				U	mg/L		-0.06	0.06			
WG343478													
WG343478LFB1	LFB	05/09/13 22:54	WI130215-3	2		1.923	mg/Kg	96.2	90	110			
WG343419PBS	PBS	05/09/13 22:55				.11	mg/Kg		-0.3	0.3			
L11853-03AS	AS	05/09/13 22:58	WI130215-3	50	13.1	59.89	mg/Kg	93.6	90	110			
L11853-18AS	AS	05/09/13 23:13	WI130215-3	10	3.4	13.32	mg/Kg	99.2	90	110			
L11855-18DUP	DUP	05/09/13 23:27			3.4	3.34	mg/Kg				1.8	20	
WG343478LFB2	LFB	05/09/13 23:30	WI130215-3	2		1.887	mg/Kg	94.4	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343476													
WG343476ICV	ICV	05/09/13 19:09	WI130411-3	.609		.602	mg/L	98.9	90	110			
WG343476ICB	ICB	05/09/13 19:10				U	mg/L		-0.03	0.03			
WG343478													
WG343478LFB1	LFB	05/09/13 22:54	WI130215-3	1		.995	mg/Kg	99.5	90	110			
WG343419PBS	PBS	05/09/13 22:55				U	mg/Kg		-0.15	0.15			
L11853-03AS	AS	05/09/13 22:58	WI130215-3	25	U	25.39	mg/Kg	101.6	90	110			
L11853-18AS	AS	05/09/13 23:13	WI130215-3	5	.09	5.332	mg/Kg	104.8	90	110			
L11855-18DUP	DUP	05/09/13 23:27			.18	.116	mg/Kg				43.2	20	RA
WG343478LFB2	LFB	05/09/13 23:30	WI130215-3	1		.98	mg/Kg	98	90	110			

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343550													
WG343550ICV	ICV	05/11/13 16:33	WI121105-5	1.003		1.006	mg/L	100.3	90	110			
WG343550ICB	ICB	05/11/13 16:35				U	mg/L		-0.15	0.15			
WG343550LFB1	LFB	05/11/13 16:36	WI121218-3	1		1.087	mg/L	108.7	90	110			
WG343419PBS	PBS	05/11/13 16:37				U	mg/Kg		-0.9	0.9			
L11853-03MS	MS	05/11/13 16:39	25XNH3	625	32	62.8	mg/Kg	123.2	75	125			
L11855-18DUP	DUP	05/11/13 17:06			.4	.43	mg/Kg				7.2	20	RA
WG343550LFB2	LFB	05/11/13 17:08	WI121218-3	1		1.034	mg/L	103.4	90	110			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343775													
WG343775ICV	ICV	05/15/13 23:11	WI130424-3	4		4	mg/L	100	90	110			
WG343775ICB	ICB	05/15/13 23:12				.2	mg/L		-0.3	0.3			
WG343634PBS1	PBS	05/15/13 23:13				.0048	%		-0.006	0.006			
WG343634LFB1	LFB	05/15/13 23:15	WI130424-2	2.5		2.42	%	96.8	85	115			
WG343634PBS2	PBS	05/15/13 23:44				U	%		-0.006	0.006			
L11853-17DUP	DUP	05/15/13 23:49			.127	.0981	%				25.7	20	RD
WG343634LFB2	LFB	05/16/13 0:02	WI130424-2	2.5		2.35	%	94	85	115			
L11853-16MS	MS	05/16/13 0:04	WI130424-2	.045	.138	.167	%	64.4	75	125			M2

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11853***

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343595													
WG343595ICV	ICV	05/15/13 13:33	PCN40669	4		3.98	units	99.5	97	103			
L11853-20DUP	DUP	05/15/13 13:59			7.5	7.46	units				0.5	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343436													
WG343436ICV	ICV	05/09/13 13:50	II130114-4	20		20.15	mg/L	100.8	90	110			
WG343436ICB	ICB	05/09/13 13:53				U	mg/L		-0.9	0.9			
WG343263PBS	PBS	05/09/13 14:06				U	mg/Kg		-90	90			
WG343263LCSS	LCSS	05/09/13 14:09	PCN42473	2600		2942	mg/Kg		1720	3470			
WG343263LCSSD	LCSSD	05/09/13 14:12	PCN42473	2600		3060	mg/Kg		1720	3470	3.9	20	
L11853-09MS	MS	05/09/13 14:49	II130502-1	9997.161	4770	14783	mg/Kg	100.2	75	125			
L11853-09MSD	MSD	05/09/13 14:53	II130502-1	9997.161	4770	14654	mg/Kg	98.9	75	125	0.88	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343688													
WG343688PBS	PBS	05/14/13 16:50				U	%		99.9	100.1			
L11853-01DUP	DUP	05/14/13 18:22			96.7	96.53	%				0.2	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-01	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11853-02	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11853-03	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-04	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-05	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-06	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11853***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-07	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-08	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L11853-09	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11853-10	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11853-11	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11853-12	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11853-13	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-14	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-15	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-16	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-17	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-18	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11853-19	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L11853-20	WG343436	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11853
Date Received: 05/01/2013 09:06
Received By: ksj
Date Printed: 5/22/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

`A change was made in the date/time page 1 and 2 section prior to ACZ custody.`

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2932	11.9	14	Yes
3076	11.7	16	Yes
3176	8.9	12	Yes
3538	12.8	14	Yes
3737	8.8	15	Yes
3921	13.3	16	Yes

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L11853
Date Received:	05/01/2013 09:06
Received By:	ksj
Date Printed:	5/22/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L11853

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L11853 Chain of Custod

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

ame: Pam Pinson
ompany: Chino Mines Company
mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

sample(s) received past holding time (HT), or if insufficient HT remains to complete alysis before expiration, shall ACZ proceed with requested short HT analyses? 'NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified. YES ☒ NO ☐

e samples for CO DW Compliance Monitoring? yes, please include state forms. Results will be reported to PQL. YES ☐ NO ☒

ROJECT INFORMATION — **ANALYSES REQUESTED** (attach list or use quote nu

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon
STS-AMD-2013S-E7 0-6	4.24.13 [illegible] 09:17	SO	1	✗	✗	✗				
STS-AMD-2013S-E8 0-6	4.24.13 0916	SO	1	✗	✗	✗				
STS-AMD-2013S-N1 0-6	4.24.13 15:10	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2013S-N2 0-6	15:14	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2013S-N3 0-6	15:19	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2013S-N1 12-18	15:59	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2013S-N2 12-18	15:45	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2013S-N3 12-18	16:04	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2013S-N4 0-6	1535	SO	1	✗	✗	✗				
STS-AMD-2013S-N5 0-6	15:27	SO	1	✗	✗	✗				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500		
		ACS 5-1-13	9:00

3/11

ACZ Laboratories, Inc. L11853

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Matt Bauer

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-N6 0-6	4.24.13 15:26	SO	1 ✓	x	x	x					
STS-AMD-2013S-N7 0-6	1521	SO	1 ✓	x	x	x					
STS-AMD-2013S-N8 0-6	15:24	SO	1 ✓	x	x	x					
STS-AMD-2013S-NE1 0-6	4.25.13 0833	SO	1 ✓	x	x	x	x	x	x	x	
STS-AMD-2013S-NE2 0-6	0825*	SO	1 ✓	x	x	x	x	x	x	x	
STS-AMD-2013S-NE3 0-6	0847	SO	1 ✓	x	x	x	x	x	x	x	
STS-AMD-2013S-NE1 6-12	0936	SO	1 ✓	x	x	x	x	x	x	x	
STS-AMD-2013S-NE2 18-24	0926	SO	1 ✓	x	x	x	x	x	x	x	
STS-AMD-2013S-NE3 6-12	0939	SO	1 ✓	x	x	x	x	x	x	x	
STS-AMD-2013S-NE4 0-6	0827	SO	1 ✓	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500		
		LPL	5-1-13 9:00

4/11

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 30, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L11854

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 01, 2013. This project has been assigned to ACZ's project number, L11854. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11854. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 29, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-01***
Sample ID:	STS-AMD-2013S-NE5 0-6	Date Sampled:	*04/25/13 08:42*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 9:29	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.28		*	mg/L	0.01	0.05	05/17/13 15:55	aeb
Copper, total (3050)	M6010B ICP	104	2690		*	mg/Kg	1	5	05/13/13 16:32	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.0		*	units	0.1	0.1	05/15/13 14:04	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.1		*	%	0.1	0.5	05/18/13 12:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:00	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 9:24	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/08/13 15:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:00	cra
Synthetic Precip. Leaching Procedure	M1312								05/15/13 20:15	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-02***
Sample ID:	STS-AMD-2013S-NE6 0-6	Date Sampled:	*04/25/13 08:46*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 10:05	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.55		*	mg/L	0.01	0.05	05/17/13 16:04	aeb
Copper, total (3050)	M6010B ICP	103	3330		*	mg/Kg	1	5	05/13/13 16:41	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.5		*	units	0.1	0.1	05/15/13 14:05	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.9		*	%	0.1	0.5	05/18/13 16:51	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:03	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 10:18	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/08/13 23:09	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:03	cra
Synthetic Precip. Leaching Procedure	M1312								05/15/13 22:23	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-03***
Sample ID:	STS-AMD-2013S-NE7 0-6	Date Sampled:	*04/25/13 08:40*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 10:17	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.25		*	mg/L	0.01	0.05	05/17/13 16:07	aeb
Copper, total (3050)	M6010B ICP	100	1770		*	mg/Kg	1	5	05/13/13 16:47	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.6		*	units	0.1	0.1	05/15/13 14:06	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.1		*	%	0.1	0.5	05/18/13 19:08	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:06	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 10:36	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 7:18	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:06	cra
Synthetic Precip. Leaching Procedure	M1312								05/15/13 23:05	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11854-04***
Project ID:	ZN000001M5	Date Sampled:	*04/25/13 08:35*
Sample ID:	STS-AMD-2013S-NE8 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 10:29	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.25		*	mg/L	0.01	0.05	05/17/13 16:10	aeb
Copper, total (3050)	M6010B ICP	102	2430		*	mg/Kg	1	5	05/13/13 16:50	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.4		*	units	0.1	0.1	05/15/13 14:07	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.6		*	%	0.1	0.5	05/18/13 21:25	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:09	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 10:54	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 15:27	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:10	cra
Synthetic Precip. Leaching Procedure	M1312								05/15/13 23:48	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-05***
Sample ID:	STS-AMD-2013S-WREF1 0-6	Date Sampled:	*04/23/13 12:50*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 16:03	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 10:41	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	13100			mg/Kg	20	100	05/13/13 17:00	jjc
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	05/17/13 16:14	aeb
Copper, total (3050)	M6010B ICP	103	746		*	mg/Kg	1	5	05/13/13 17:00	jjc
Potassium, total (3050)	M6010B ICP	103	3880			mg/Kg	30	200	05/13/13 17:00	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	05/12/13 16:36	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/12/13 16:36	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.8		*	units	0.1	0.1	05/15/13 14:08	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.1		*	%	0.1	0.5	05/18/13 23:42	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:12	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 11:12	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 23:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:13	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 0:31	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 19:05	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.0	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	2.0	B	*	mg/Kg	0.5	3	05/14/13 23:06	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/14/13 23:06	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 0:57	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	113	0.090		*	%	0.001	0.006	05/15/13 23:55	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013S-WREF2 0-6

ACZ Sample ID:	***L11854-06***
Date Sampled:	*04/23/13 12:55*
Date Received:	*05/01/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 16:14	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 10:53	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	13200			mg/Kg	20	100	05/13/13 17:03	jjc
Copper (1312)	M6010B ICP	1	0.08		*	mg/L	0.01	0.05	05/17/13 16:17	aeb
Copper, total (3050)	M6010B ICP	102	1530		*	mg/Kg	1	5	05/13/13 17:03	jjc
Potassium, total (3050)	M6010B ICP	102	3210			mg/Kg	30	200	05/13/13 17:03	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	05/12/13 20:17	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/12/13 20:17	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.8		*	units	0.1	0.1	05/15/13 14:10	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.6		*	%	0.1	0.5	05/19/13 2:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:15	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 11:30	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 7:45	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:16	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 1:13	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 19:19	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.5	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	2.5	B	*	mg/Kg	0.5	3	05/14/13 23:07	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/14/13 23:07	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	05/15/13 0:58	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	207	0.106		*	%	0.002	0.01	05/15/13 23:56	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-07***
Sample ID:	STS-AMD-2013S-WREF1 18-24	Date Sampled:	*04/23/13 14:15*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 16:25	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 11:05	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	505	130000			mg/Kg	100	500	05/14/13 12:02	aeb
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	05/17/13 16:26	aeb
Copper, total (3050)	M6010B ICP	101	378		*	mg/Kg	1	5	05/13/13 17:06	jjc
Potassium, total (3050)	M6010B ICP	101	1780			mg/Kg	30	200	05/13/13 17:06	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	4.1		*	%	0.1	0.5	05/12/13 23:57	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	05/12/13 23:57	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.8		*	units	0.1	0.1	05/15/13 14:11	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.8		*	%	0.1	0.5	05/19/13 4:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:18	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 11:48	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 15:54	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:20	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 2:38	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 19:34	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.7			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.8		*	mg/Kg	0.1	0.5	05/14/13 23:09	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.12	B	*	mg/Kg	0.05	0.3	05/14/13 23:09	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 0:59	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	150	0.033		*	%	0.002	0.008	05/15/13 23:57	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-WREF2 18-24

ACZ Sample ID: ***L11854-08***
Date Sampled: *04/23/13 14:35*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 16:37	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 11:17	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	510	120000			mg/Kg	100	500	05/14/13 12:05	aeb
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	05/17/13 16:29	aeb
Copper, total (3050)	M6010B ICP	102	432		*	mg/Kg	1	5	05/13/13 17:09	jjc
Potassium, total (3050)	M6010B ICP	102	2260			mg/Kg	30	200	05/13/13 17:09	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	4.4		*	%	0.1	0.5	05/13/13 3:38	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	05/13/13 3:38	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 14:12	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.3		*	%	0.1	0.5	05/19/13 6:34	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:22	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 12:06	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 0:03	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:23	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 3:21	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 19:48	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.7			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	2.7		*	mg/Kg	0.1	0.5	05/14/13 23:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.05	B	*	mg/Kg	0.05	0.3	05/14/13 23:10	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 1:01	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	155	0.058		*	%	0.002	0.008	05/15/13 23:58	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-WREF3 0-6

ACZ Sample ID: ***L11854-09***
Date Sampled: *04/23/13 13:05*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 11:30	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12		*	mg/L	0.01	0.05	05/17/13 16:32	aeb
Copper, total (3050)	M6010B ICP	101	1740		*	mg/Kg	1	5	05/13/13 17:12	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.7		*	units	0.1	0.1	05/15/13 14:13	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.4		*	%	0.1	0.5	05/19/13 8:51	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:25	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 12:24	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 8:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:26	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 4:03	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11854-10***
Project ID:	ZN000001M5	Date Sampled:	*04/23/13 13:22*
Sample ID:	STS-AMD-2013S-WREF4 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 11:42	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.08		*	mg/L	0.01	0.05	05/17/13 16:38	aeb
Copper, total (3050)	M6010B ICP	102	2240		*	mg/Kg	1	5	05/13/13 17:15	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 14:14	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.6		*	%	0.1	0.5	05/19/13 11:08	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:28	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 12:42	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 16:21	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:30	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 4:46	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-WREF5 0-6

ACZ Sample ID: ***L11854-11***
Date Sampled: *04/23/13 13:17*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 11:54	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.06		*	mg/L	0.01	0.05	05/17/13 16:41	aeb
Copper, total (3050)	M6010B ICP	102	1110		*	mg/Kg	1	5	05/13/13 17:18	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 14:16	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.1		*	%	0.1	0.5	05/19/13 13:25	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:31	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 13:00	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 0:30	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:33	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 5:29	cra/cbd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-WREF6 0-6

ACZ Sample ID: ***L11854-12***
Date Sampled: *04/23/13 13:23*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 12:06	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	05/17/13 16:44	aeb
Copper, total (3050)	M6010B ICP	102	984		*	mg/Kg	1	5	05/13/13 17:21	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.7		*	units	0.1	0.1	05/15/13 14:17	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	05/19/13 15:42	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:34	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 13:18	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 8:39	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:36	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 6:11	cra/cbd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-WREF7 0-6

ACZ Sample ID: ***L11854-13***
Date Sampled: *04/23/13 13:27*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 12:18	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	05/17/13 16:47	aeb
Copper, total (3050)	M6010B ICP	102	1440		*	mg/Kg	1	5	05/13/13 17:24	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.7		*	units	0.1	0.1	05/15/13 14:18	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.9		*	%	0.1	0.5	05/19/13 18:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:37	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 13:36	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 16:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:40	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 6:54	cra/cbd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-14***
Sample ID:	STS-AMD-2013S-WREF8 0-6	Date Sampled:	*04/23/13 13:25*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 12:30	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05		*	mg/L	0.01	0.05	05/17/13 16:51	aeb
Copper, total (3050)	M6010B ICP	102	1740		*	mg/Kg	1	5	05/13/13 17:28	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 14:20	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.5		*	%	0.1	0.5	05/19/13 20:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:40	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 13:54	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 0:57	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:43	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 7:36	cra/cbd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11854-15***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 11:04*
Sample ID:	STS-AMD-2013S-EREF1 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 16:48	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 12:42	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	3770			mg/Kg	20	100	05/13/13 17:37	jjc
Copper (1312)	M6010B ICP	1	0.05	B	*	mg/L	0.01	0.05	05/17/13 16:54	aeb
Copper, total (3050)	M6010B ICP	102	1020		*	mg/Kg	1	5	05/13/13 17:37	jjc
Potassium, total (3050)	M6010B ICP	102	4200			mg/Kg	30	200	05/13/13 17:37	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	05/13/13 7:18	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/13/13 7:18	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.9		*	units	0.1	0.1	05/15/13 14:21	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.3		*	%	0.1	0.5	05/19/13 22:34	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:44	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 14:12	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 9:06	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:46	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 8:19	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 20:02	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.8	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	0.8	B	*	mg/Kg	0.5	3	05/14/13 23:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/14/13 23:11	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/15/13 1:02	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	177	0.091		*	%	0.002	0.009	05/16/13 0:00	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-EREF2 0-6

ACZ Sample ID: ***L11854-16***
Date Sampled: *04/24/13 11:09*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/14/13 16:59	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 12:54	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	5540			mg/Kg	20	100	05/13/13 17:40	jjc
Copper (1312)	M6010B ICP	1	0.06		*	mg/L	0.01	0.05	05/17/13 17:03	aeb
Copper, total (3050)	M6010B ICP	102	864		*	mg/Kg	1	5	05/13/13 17:40	jjc
Potassium, total (3050)	M6010B ICP	102	3760			mg/Kg	30	200	05/13/13 17:40	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/13/13 10:59	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	05/13/13 10:59	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.9		*	units	0.1	0.1	05/15/13 14:22	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	05/20/13 0:51	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:47	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 14:30	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 17:15	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:50	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 9:02	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 20:17	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		10.3			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	10.3		*	mg/Kg	0.1	0.5	05/14/13 23:15	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	05/14/13 23:15	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 1:05	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	148	0.075		*	%	0.002	0.008	05/16/13 0:01	pjb

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-17***
Sample ID:	STS-AMD-2013S-EREF1 6-12	Date Sampled:	*04/24/13 11:59*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 12:12	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 13:06	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	105	37300			mg/Kg	20	100	05/13/13 17:43	jjc
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	05/17/13 17:06	aeb
Copper, total (3050)	M6010B ICP	105	72		*	mg/Kg	1	5	05/13/13 17:43	jjc
Potassium, total (3050)	M6010B ICP	105	7010			mg/Kg	30	200	05/13/13 17:43	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.9		*	%	0.1	0.5	05/13/13 14:39	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	05/13/13 14:39	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.5		*	units	0.1	0.1	05/15/13 14:23	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	84.2		*	%	0.1	0.5	05/20/13 3:08	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:50	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 14:48	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 1:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:53	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 10:27	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 20:31	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.0			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	2.1		*	mg/Kg	0.1	0.5	05/14/13 23:16	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.07	B	*	mg/Kg	0.05	0.3	05/14/13 23:16	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 1:06	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	131	0.105	H	*	%	0.001	0.007	05/23/13 13:07	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11854-18***
Sample ID:	STS-AMD-2013S-EREF2 6-12	Date Sampled:	*04/24/13 12:06*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 12:33	lhb
Total Hot Plate Digestion	M3010A ICP								05/17/13 13:18	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	6580			mg/Kg	20	100	05/13/13 17:46	jjc
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	05/17/13 17:09	aeb
Copper, total (3050)	M6010B ICP	103	455		*	mg/Kg	1	5	05/13/13 17:46	jjc
Potassium, total (3050)	M6010B ICP	103	4710			mg/Kg	30	200	05/13/13 17:46	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/13/13 18:19	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/13/13 18:19	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.9		*	units	0.1	0.1	05/15/13 14:24	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	89.5		*	%	0.1	0.5	05/20/13 5:25	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:53	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 15:06	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 9:33	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 12:56	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 11:09	cra/cbd
Water Extraction	ASA No. 9 10-2.3.2								05/13/13 20:45	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		9.3			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	9.3		*	mg/Kg	0.1	0.5	05/14/13 23:17	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	05/14/13 23:17	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/15/13 1:07	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	141	0.103	H	*	%	0.001	0.007	05/23/13 13:09	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11854-19***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 11:12*
Sample ID:	STS-AMD-2013S-EREF3 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 13:30	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.21		*	mg/L	0.01	0.05	05/17/13 17:12	aeb
Copper, total (3050)	M6010B ICP	102	904		*	mg/Kg	1	5	05/13/13 17:49	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.4		*	units	0.1	0.1	05/15/13 14:25	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.3		*	%	0.1	0.5	05/20/13 7:43	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:56	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 15:24	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 17:42	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:00	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 11:52	cra/cbd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-EREF4 0-6

ACZ Sample ID: ***L11854-20***
Date Sampled: *04/24/13 11:16*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/17/13 13:42	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09		*	mg/L	0.01	0.05	05/17/13 17:15	aeb
Copper, total (3050)	M6010B ICP	102	1130		*	mg/Kg	1	5	05/13/13 17:52	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.7		*	units	0.1	0.1	05/15/13 14:26	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.6		*	%	0.1	0.5	05/20/13 10:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:59	mjj
Digestion - Hot Plate	M3050B ICP								05/10/13 15:42	cdb
Saturated Paste Extraction	USDA No. 60 (2)								05/15/13 1:51	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:03	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 12:34	cra/cbd

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11854***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343606													
WG343606ICV	ICV	05/13/13 16:07	II130114-4	100		99.52	mg/L	99.5	90	110			
WG343606ICB	ICB	05/13/13 16:10				U	mg/L		-0.6	0.6			
WG343482PBS	PBS	05/13/13 16:23				U	mg/Kg		-60	60			
WG343482LCSS	LCSS	05/13/13 16:26	PCN42473	7890		8180	mg/Kg		6500	9290			
WG343482LCSSD	LCSSD	05/13/13 16:29	PCN42473	7890		8880	mg/Kg		6500	9290	8.2	20	
L11854-01MS	MS	05/13/13 16:35	II130502-1	7067.75472	6280	13782	mg/Kg	106.1	75	125			
L11854-01MSD	MSD	05/13/13 16:38	II130502-1	7067.75472	6280	13885	mg/Kg	107.6	75	125	0.74	20	
WG343624													
WG343624ICV	ICV	05/14/13 11:28	II130114-4	100		99.32	mg/L	99.3	90	110			
WG343624ICB	ICB	05/14/13 11:31				U	mg/L		-0.6	0.6			
WG343482PBS	PBS	05/14/13 11:44				U	mg/Kg		-60	60			
WG343482LCSS	LCSS	05/14/13 11:47	PCN42473	7890		8054	mg/Kg		6500	9290			
WG343482LCSSD	LCSSD	05/14/13 11:50	PCN42473	7890		8696	mg/Kg		6500	9290	7.7	20	
L11854-01MS	MS	05/14/13 11:56	II130502-1	7067.75472	6100	13660	mg/Kg	107	75	125			
L11854-01MSD	MSD	05/14/13 11:59	II130502-1	7067.75472	6100	13742	mg/Kg	108.1	75	125	0.6	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343483													
WG343483PBS	PBS	05/10/13 9:30				U	%		-0.3	0.3			
WG343483LCSS	LCSS	05/10/13 13:10	PCN42343	4.19		4.3	%		80	120			
L11852-01DUP	DUP	05/10/13 20:31			1.1	1.1	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343483													
WG343483PBS	PBS	05/10/13 9:30				U	%		-0.3	0.3			
L11852-01DUP	DUP	05/10/13 20:31			1.1	1	%				9.5	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343911													
WG343911ICV	ICV	05/17/13 15:34	II130514-1	2		1.978	mg/L	98.9	90	110			
WG343911ICB	ICB	05/17/13 15:37				U	mg/L		-0.03	0.03			
WG343762PBS	PBS	05/17/13 15:49				U	mg/L		-0.03	0.03			
WG343762LFB	LFB	05/17/13 15:52	II130502-1	.5		.473	mg/L	94.6	85	115			
L11854-01MS	MS	05/17/13 15:58	II130502-1	.5	.28	.768	mg/L	97.6	75	125			
L11854-01MSD	MSD	05/17/13 16:01	II130502-1	.5	.28	.765	mg/L	97	75	125	0.39	20	
L11854-20DUP	DUP	05/17/13 17:18			.09	.1	mg/L				10.5	20	RA

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343606													
WG343606ICV	ICV	05/13/13 16:07	II130114-4	2		1.947	mg/L	97.4	90	110			
WG343606ICB	ICB	05/13/13 16:10				U	mg/L		-0.03	0.03			
WG343482PBS	PBS	05/13/13 16:23				U	mg/Kg		-3	3			
WG343482LCSS	LCSS	05/13/13 16:26	PCN42473	162		158.1	mg/Kg		135	190			
WG343482LCSSD	LCSSD	05/13/13 16:29	PCN42473	162		175.9	mg/Kg		135	190	10.7	20	
L11854-01MS	MS	05/13/13 16:35	II130502-1	52	2690	2708.7	mg/Kg	36	75	125			M3
L11854-01MSD	MSD	05/13/13 16:38	II130502-1	52	2690	2776.7	mg/Kg	166.7	75	125	2.48	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343692													
WG343692ICV	ICV	05/14/13 18:50	WI130411-3	2.416		2.404	mg/L	99.5	90	110			
WG343692ICB	ICB	05/14/13 18:51				U	mg/L		-0.06	0.06			
WG343695													
WG343695LFB	LFB	05/14/13 22:46	WI130215-3	2		2.014	mg/Kg	100.7	90	110			
WG343418PBS	PBS	05/14/13 22:47				U	mg/Kg		-0.3	0.3			
L11854-18DUP	DUP	05/14/13 23:18			9.3	9.3	mg/Kg				0	20	
L11852-14AS	AS	05/14/13 23:22	WI130215-3	50	33.1	78.4	mg/Kg	90.6	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343692													
WG343692ICV	ICV	05/14/13 18:50	WI130411-3	.609		.599	mg/L	98.4	90	110			
WG343692ICB	ICB	05/14/13 18:51				U	mg/L		-0.03	0.03			
WG343695													
WG343695LFB	LFB	05/14/13 22:46	WI130215-3	1		.991	mg/Kg	99.1	90	110			
WG343418PBS	PBS	05/14/13 22:47				U	mg/Kg		-0.15	0.15			
L11852-14AS	AS	05/14/13 23:01	WI130215-3	5	U	4.465	mg/Kg	89.3	90	110			M2
L11854-18DUP	DUP	05/14/13 23:18			U	U	mg/Kg				0	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343700													
WG343700ICV	ICV	05/15/13 0:36	WI121105-5	1.003		1.008	mg/L	100.5	90	110			
WG343700ICB	ICB	05/15/13 0:37				U	mg/L		-0.15	0.15			
WG343700LFB	LFB	05/15/13 0:38	WI121218-3	1		1.041	mg/L	104.1	90	110			
WG343418PBS	PBS	05/15/13 0:39				U	mg/Kg		-0.9	0.9			
L11852-14MS	MS	05/15/13 0:53	NH35X	25	5.8	10.91	mg/Kg	102.2	75	125			
L11854-18DUP	DUP	05/15/13 1:08			U	U	mg/Kg				0	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343775													
WG343775ICV	ICV	05/15/13 23:11	WI130424-3	4		4	mg/L	100	90	110			
WG343775ICB	ICB	05/15/13 23:12				.2	mg/L		-0.3	0.3			
WG343634PBS1	PBS	05/15/13 23:13				.0048	%		-0.006	0.006			
WG343634LFB1	LFB	05/15/13 23:15	WI130424-2	2.5		2.42	%	96.8	85	115			
WG343634PBS2	PBS	05/15/13 23:44				U	%		-0.006	0.006			
L11853-17DUP	DUP	05/15/13 23:49			.127	.0981	%				25.7	20	RD
WG343634LFB2	LFB	05/16/13 0:02	WI130424-2	2.5		2.35	%	94	85	115			
L11853-16MS	MS	05/16/13 0:04	WI130424-2	.045	.138	.167	%	64.4	75	125			M2
WG344213													
WG344213ICV	ICV	05/23/13 12:09	WI130520-1	4		4.15	mg/L	103.8	90	110			
WG344213ICB	ICB	05/23/13 12:10				U	mg/L		-0.3	0.3			
WG344141PBS	PBS	05/23/13 12:15				.0047	%		-0.006	0.006			
WG344141LFB	LFB	05/23/13 12:16	WI130424-2	2.5		2.41	%	96.4	85	115			
L11855-05MS	MS	05/23/13 13:11	WI130424-2	.0325	.099	.1327	%	103.7	75	125			
L11855-06DUP	DUP	05/23/13 13:13			.076	.075	%				1.3	20	

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343596													
WG343596ICV	ICV	05/15/13 14:03	PCN40669	4		4.01	units	100.3	97	103			
L11854-20DUP	DUP	05/15/13 14:29			5.7	5.62	units				1.4	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343606													
WG343606ICV	ICV	05/13/13 16:07	II130114-4	20		20.02	mg/L	100.1	90	110			
WG343606ICB	ICB	05/13/13 16:10				U	mg/L		-0.9	0.9			
WG343482PBS	PBS	05/13/13 16:23				U	mg/Kg		-90	90			
WG343482LCSS	LCSS	05/13/13 16:26	PCN42473	2600		2947	mg/Kg		1720	3470			
WG343482LCSSD	LCSSD	05/13/13 16:29	PCN42473	2600		2994	mg/Kg		1720	3470	1.6	20	
L11854-01MS	MS	05/13/13 16:35	II130502-1	10397.04744	4420	15134	mg/Kg	103	75	125			
L11854-01MSD	MSD	05/13/13 16:38	II130502-1	10397.04744	4420	15102	mg/Kg	102.7	75	125	0.21	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343929													
WG343929PBS	PBS	05/18/13 10:00				U	%		99.9	100.1			
L11854-01DUP	DUP	05/18/13 14:34			94.1	93.77	%				0.4	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11854***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-01	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-02	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-03	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-04	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-05	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-06	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-07	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

Freeport-McMoRan - Chino Mines Company ACZ Project ID: ***L11854***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-08	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L11854-09	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-10	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-11	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-12	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-13	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-14	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-15	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-16	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343775	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-17	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11854-18	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343483	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343695	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343700	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L11854-19	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11854-20	WG343911	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG343606	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11854
Date Received: 05/01/2013 08:52
Received By: ksj
Date Printed: 5/22/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

`A change was made in the date/time page 1 section prior to ACZ custody.`

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
2599           11.8           16               Yes
2932           11.9           14               Yes
3538           12.8           14               Yes
3574           11             15               Yes
3737           8.8            15               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L11854
Date Received:	05/01/2013 08:52
Received By:	ksj
Date Printed:	5/22/2013

ACZ Laboratories, Inc. L11854

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L11854 Chain of Custod

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

ame: Pam Pinson	Address: P.O. Box 10
ompany: Chino Mines Company	Bayard, NM 88023
mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

sample(s) received past holding time (HT), or if insufficient HT remains to complete ialysis before expiration, shall ACZ proceed with requested short HT analyses? "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.
YES ☒
NO ☐

'e samples for CO DW Compliance Monitoring? yes, please include state forms. Results will be reported to PQL.
YES ☐
NO ☒

ROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Matt Bauer

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote num

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-NE5 0-6	4/[illegible]/2013 25 0842	SO	1	x	x	x					
STS-AMD-2013S-NE6 0-6	0846	SO	1	x	x	x					
STS-AMD-2013S-NE7 0-6	0840	SO	1	x	x	x					
STS-AMD-2013S-NE8 0-6	0835	SO	1	x	x	x					
STS-AMD-2013S-WREF1 0-6	4/23/2013 12:50	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-WREF2 0-6	12:55	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-WREF1 18-24	14:15	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-WREF2 18-24	14:35	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-WREF3 0-6	13:05	SO	1	x	x	x					
STS-AMD-2013S-WREF4 0-6	13:22	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500	LEB	5.1.13 8:52

5/1

ACZ Laboratories, Inc. L11854

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-WREF5 0-6	4/23/2013 13:17	SO	1	x	x	x					
STS-AMD-2013S-WREF6 0-6	13:23	SO	1	x	x	x					
STS-AMD-2013S-WREF7 0-6	13:27	SO	1	x	x	x					
STS-AMD-2013S-WREF8 0-6	13:25	SO	1	x	x	x					
STS-AMD-2013S-EREF1 0-6	4.24.13 1104	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-EREF2 0-6	4.24.13 1109	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-EREF1 6-12	4.24.13 :1159	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-EREF2 6-12	4.24.13 1206	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-EREF3 0-6	4.24.13 11:12	SO	1	x	x	x					
STS-AMD-2013S-EREF4 0-6	4.24.13 1116	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500	LZO	5.1.13 8:52

6/11

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 30, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L11855

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 01, 2013. This project has been assigned to ACZ's project number, L11855. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11855. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 29, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-EREF5 0-6

ACZ Sample ID: ***L11855-01***
Date Sampled: *04/24/13 11:17*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 9:24	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.33			mg/L	0.01	0.05	05/20/13 18:04	aeb
Copper, total (3050)	M6010B ICP	102	1290			mg/Kg	1	5	05/15/13 19:22	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.4		*	units	0.1	0.1	05/15/13 17:04	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.7		*	%	0.1	0.5	05/18/13 12:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 22:03	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 10:50	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:06	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 20:26	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-02***
Sample ID:	STS-AMD-2013S-EREF6 0-6	Date Sampled:	*04/24/13 11:28*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:01	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.98			mg/L	0.01	0.05	05/20/13 18:13	aeb
Copper, total (3050)	M6010B ICP	101	1040			mg/Kg	1	5	05/15/13 19:25	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.5		*	units	0.1	0.1	05/15/13 17:05	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.4		*	%	0.1	0.5	05/18/13 16:51	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/05/13 23:24	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:07	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 19:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:10	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 22:54	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013S-EREF7 0-6

ACZ Sample ID:	***L11855-03***
Date Sampled:	*04/24/13 11:23*
Date Received:	*05/01/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:13	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.14			mg/L	0.01	0.05	05/20/13 18:16	aeb
Copper, total (3050)	M6010B ICP	102	1130			mg/Kg	1	5	05/15/13 19:28	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.1		*	units	0.1	0.1	05/15/13 17:06	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	93.5		*	%	0.1	0.5	05/18/13 19:08	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 0:45	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:24	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 2:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:13	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 23:43	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-04***
Sample ID:	STS-AMD-2013S-EREF8 0-6	Date Sampled:	*04/24/13 11:21*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:26	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.08			mg/L	0.01	0.05	05/20/13 18:20	aeb
Copper, total (3050)	M6010B ICP	102	1420			mg/Kg	1	5	05/15/13 19:35	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.0		*	units	0.1	0.1	05/15/13 17:07	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.2		*	%	0.1	0.5	05/18/13 21:25	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 2:06	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 9:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:16	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 0:32	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-05***
Sample ID:	STS-AMD-2013S-NREF1 0-6	Date Sampled:	*04/24/13 17:07*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 12:53	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:38	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	5280			mg/Kg	20	100	05/15/13 19:38	aeb
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	05/20/13 18:23	aeb
Copper, total (3050)	M6010B ICP	102	895			mg/Kg	1	5	05/15/13 19:38	aeb
Potassium, total (3050)	M6010B ICP	102	3460			mg/Kg	30	200	05/15/13 19:38	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.0		*	%	0.1	0.5	05/12/13 16:44	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/12/13 16:44	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.2		*	units	0.1	0.1	05/15/13 17:08	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.2		*	%	0.1	0.5	05/18/13 23:42	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 3:27	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:57	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/10/13 16:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:20	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 1:22	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 13:10	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.6	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	0.6	B	*	mg/Kg	0.5	3	05/09/13 23:16	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:16	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 16:55	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	111	0.099	H	*	%	0.001	0.006	05/23/13 13:10	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NREF2 0-6

ACZ Sample ID: ***L11855-06***
Date Sampled: *04/24/13 17:24*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 13:34	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:50	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	10200			mg/Kg	20	100	05/15/13 19:41	aeb
Copper (1312)	M6010B ICP	1	0.05	B		mg/L	0.01	0.05	05/20/13 18:26	aeb
Copper, total (3050)	M6010B ICP	102	317			mg/Kg	1	5	05/15/13 19:41	aeb
Potassium, total (3050)	M6010B ICP	102	2760			mg/Kg	30	200	05/15/13 19:41	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/12/13 20:27	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.0		*	%	0.1	0.5	05/12/13 20:27	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.1		*	units	0.1	0.1	05/15/13 17:10	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.2		*	%	0.1	0.5	05/19/13 2:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 4:48	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 12:14	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 0:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:23	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 2:11	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 13:29	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.8	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	0.8	B	*	mg/Kg	0.5	3	05/09/13 23:17	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:17	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 16:56	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	150	0.076	H	*	%	0.002	0.008	05/23/13 13:12	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NREF1 6-12

ACZ Sample ID: ***L11855-07***
Date Sampled: *04/24/13 17:45*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 14:15	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:03	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	104	7830			mg/Kg	20	100	05/15/13 19:50	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/20/13 18:35	aeb
Copper, total (3050)	M6010B ICP	104	234			mg/Kg	1	5	05/15/13 19:50	aeb
Potassium, total (3050)	M6010B ICP	104	5000			mg/Kg	30	200	05/15/13 19:50	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/13/13 0:10	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/13/13 0:10	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.9		*	units	0.1	0.1	05/15/13 17:11	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	82.7		*	%	0.1	0.5	05/19/13 4:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 6:09	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 12:31	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 7:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:26	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 3:50	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 13:49	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.1	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	1.1	B	*	mg/Kg	0.5	3	05/09/13 23:18	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:18	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 16:57	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	147	0.111	H	*	%	0.002	0.008	05/23/13 13:14	bsu

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NREF2 18-24

ACZ Sample ID: ***L11855-08***
Date Sampled: *04/24/13 17:55*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 14:36	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:15	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	12500			mg/Kg	20	100	05/15/13 19:53	aeb
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	05/20/13 18:41	aeb
Copper, total (3050)	M6010B ICP	102	34			mg/Kg	1	5	05/15/13 19:53	aeb
Potassium, total (3050)	M6010B ICP	102	2180			mg/Kg	30	200	05/15/13 19:53	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	05/13/13 3:53	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	05/13/13 3:53	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 17:12	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	93.0		*	%	0.1	0.5	05/19/13 6:34	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 7:30	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 12:48	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 14:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:30	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 4:39	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 14:08	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.1			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.1		*	mg/Kg	0.1	0.5	05/09/13 23:19	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	05/09/13 23:19	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.3	B	*	mg/Kg	0.3	3	05/11/13 16:58	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	179	0.047	H	*	%	0.002	0.009	05/23/13 13:15	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-09***
Sample ID:	STS-AMD-2013S-NREF3 0-6	Date Sampled:	*04/24/13 17:23*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:27	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/20/13 18:44	aeb
Copper, total (3050)	M6010B ICP	102	74			mg/Kg	1	5	05/15/13 19:56	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.4		*	units	0.1	0.1	05/15/13 17:13	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.7		*	%	0.1	0.5	05/19/13 8:51	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 8:52	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 13:04	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/11/13 21:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:33	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 5:28	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-10***
Sample ID:	STS-AMD-2013S-NREF4 0-6	Date Sampled:	*04/24/13 17:21*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:39	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	05/20/13 18:47	aeb
Copper, total (3050)	M6010B ICP	103	292			mg/Kg	1	5	05/15/13 20:05	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.2		*	units	0.1	0.1	05/15/13 17:14	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.4		*	%	0.1	0.5	05/19/13 11:08	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 10:13	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 13:55	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 4:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:36	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 6:18	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11855-11***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 17:11*
Sample ID:	STS-AMD-2013S-NREF5 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:52	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B		mg/L	0.01	0.05	05/20/13 18:50	aeb
Copper, total (3050)	M6010B ICP	102	428			mg/Kg	1	5	05/15/13 20:09	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.8		*	units	0.1	0.1	05/15/13 17:16	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.3		*	%	0.1	0.5	05/19/13 13:25	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 11:34	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 14:12	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:40	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 7:07	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11855-12***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 17:46*
Sample ID:	STS-AMD-2013S-NREF6 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:04	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	05/20/13 18:53	aeb
Copper, total (3050)	M6010B ICP	103	770			mg/Kg	1	5	05/15/13 20:12	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.1		*	units	0.1	0.1	05/15/13 17:17	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.3		*	%	0.1	0.5	05/19/13 15:42	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 12:55	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 14:28	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/12/13 19:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:43	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 7:57	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-13***
Sample ID:	STS-AMD-2013S-NREF7 0-6	Date Sampled:	*04/24/13 17:11*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:16	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	05/20/13 18:56	aeb
Copper, total (3050)	M6010B ICP	102	642			mg/Kg	1	5	05/15/13 20:15	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.0		*	units	0.1	0.1	05/15/13 17:18	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	93.8		*	%	0.1	0.5	05/19/13 18:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 14:16	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 14:45	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 2:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:46	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 8:46	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11855-14***
Project ID:	ZN000001M5	Date Sampled:	*04/24/13 17:28*
Sample ID:	STS-AMD-2013S-NREF8 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:29	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	05/20/13 19:00	aeb
Copper, total (3050)	M6010B ICP	103	607			mg/Kg	1	5	05/15/13 20:18	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.0		*	units	0.1	0.1	05/15/13 17:20	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	05/19/13 20:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 15:37	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:02	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 9:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:50	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 9:35	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NEREF1 0-6

ACZ Sample ID: ***L11855-15***
Date Sampled: *04/25/13 10:16*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 14:56	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:41	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	5940			mg/Kg	20	100	05/15/13 20:27	aeb
Copper (1312)	M6010B ICP	1	0.81			mg/L	0.01	0.05	05/20/13 19:03	aeb
Copper, total (3050)	M6010B ICP	103	3630			mg/Kg	1	5	05/15/13 20:27	aeb
Potassium, total (3050)	M6010B ICP	103	4210			mg/Kg	30	200	05/15/13 20:27	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	05/13/13 7:36	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	05/13/13 7:36	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.1		*	units	0.1	0.1	05/15/13 17:21	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	93.7		*	%	0.1	0.5	05/19/13 22:34	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 16:58	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:19	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/13/13 16:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:53	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 10:25	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 14:27	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		19.6			mg/Kg	0.2	1	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	10	19.6		*	mg/Kg	0.2	1	05/09/13 23:42	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.05	B	*	mg/Kg	0.05	0.3	05/09/13 23:23	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	5.2		*	mg/Kg	0.3	3	05/11/13 16:59	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	145	0.172		*	%	0.002	0.008	05/23/13 13:16	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NEREF2 0-6

ACZ Sample ID: ***L11855-16***
Date Sampled: *04/25/13 10:40*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 15:17	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:53	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	5130			mg/Kg	20	100	05/15/13 20:30	aeb
Copper (1312)	M6010B ICP	1	0.93			mg/L	0.01	0.05	05/20/13 19:12	aeb
Copper, total (3050)	M6010B ICP	103	3080			mg/Kg	1	5	05/15/13 20:30	aeb
Potassium, total (3050)	M6010B ICP	103	3790			mg/Kg	30	200	05/15/13 20:30	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.1		*	%	0.1	0.5	05/13/13 11:19	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	05/13/13 11:19	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.7		*	units	0.1	0.1	05/15/13 17:22	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.4		*	%	0.1	0.5	05/20/13 0:51	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 18:19	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:36	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 0:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 13:56	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 11:14	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 14:47	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		35.9			mg/Kg	0.4	2	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	20	35.9		*	mg/Kg	0.4	2	05/09/13 23:43	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	05/09/13 23:24	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	7.9		*	mg/Kg	0.3	3	05/11/13 17:03	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	170	0.251		*	%	0.002	0.009	05/23/13 13:18	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NEREF1 6-12

ACZ Sample ID: ***L11855-17***
Date Sampled: *04/25/13 11:12*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 15:37	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:06	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	107	8790			mg/Kg	20	100	05/15/13 20:33	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/20/13 19:15	aeb
Copper, total (3050)	M6010B ICP	107	211			mg/Kg	1	5	05/15/13 20:33	aeb
Potassium, total (3050)	M6010B ICP	107	4380			mg/Kg	30	200	05/15/13 20:33	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/13/13 15:01	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/13/13 15:01	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.8		*	units	0.1	0.1	05/15/13 17:23	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	85.4		*	%	0.1	0.5	05/20/13 3:08	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 19:40	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:52	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 7:12	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:00	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 12:53	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 15:06	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.7			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	2.8		*	mg/Kg	0.1	0.5	05/09/13 23:25	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.15	B	*	mg/Kg	0.05	0.3	05/09/13 23:25	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	05/11/13 17:04	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	132	0.074		*	%	0.001	0.007	05/23/13 13:21	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-18***
Sample ID:	STS-AMD-2013S-NEREF2 18-24	Date Sampled:	*04/25/13 11:05*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 15:58	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:18	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	107	13400			mg/Kg	20	100	05/15/13 20:36	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	05/20/13 19:18	aeb
Copper, total (3050)	M6010B ICP	107	749			mg/Kg	1	5	05/15/13 20:36	aeb
Potassium, total (3050)	M6010B ICP	107	4710			mg/Kg	30	200	05/15/13 20:36	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	05/13/13 18:44	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	05/13/13 18:44	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.2		*	units	0.1	0.1	05/15/13 17:24	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	82.0		*	%	0.1	0.5	05/20/13 5:25	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 21:01	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 16:09	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 14:24	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:03	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 13:42	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 15:25	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.2			mg/Kg	0.1	0.5	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.4		*	mg/Kg	0.1	0.5	05/09/13 23:26	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.18	B	*	mg/Kg	0.05	0.3	05/09/13 23:26	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.4	B	*	mg/Kg	0.3	3	05/11/13 17:05	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	140	0.077		*	%	0.001	0.007	05/23/13 13:22	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-19***
Sample ID:	STS-AMD-2013S-NEREF3 0-6	Date Sampled:	*04/25/13 10:36*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:30	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.62			mg/L	0.01	0.05	05/20/13 19:21	aeb
Copper, total (3050)	M6010B ICP	103	3860			mg/Kg	1	5	05/15/13 20:39	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.7		*	units	0.1	0.1	05/15/13 17:25	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	05/20/13 7:43	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 22:22	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 16:26	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/14/13 21:36	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:06	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 14:31	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11855-20***
Sample ID:	STS-AMD-2013S-NEREF4 0-6	Date Sampled:	*04/25/13 10:20*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:42	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.54			mg/L	0.01	0.05	05/20/13 19:24	aeb
Copper, total (3050)	M6010B ICP	104	3450			mg/Kg	1	5	05/15/13 20:43	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.3		*	units	0.1	0.1	05/15/13 17:26	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.3		*	%	0.1	0.5	05/20/13 10:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/06/13 23:43	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 16:43	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/15/13 4:48	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:10	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 15:21	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343717													
WG343717ICV	ICV	05/15/13 18:57	II130514-1	100		101.88	mg/L	101.9	90	110			
WG343717ICB	ICB	05/15/13 19:00				U	mg/L		-0.6	0.6			
WG343640PBS	PBS	05/15/13 19:13				U	mg/Kg		-60	60			
WG343640LCSS	LCSS	05/15/13 19:16	PCN42473	7890		8821	mg/Kg		6500	9290			
WG343640LCSSD	LCSSD	05/15/13 19:19	PCN42473	7890		9039	mg/Kg		6500	9290	2.4	20	
L11855-09MS	MS	05/15/13 19:59	II130502-1	6931.83636	7090	13445	mg/Kg	91.7	75	125			
L11855-09MSD	MSD	05/15/13 20:02	II130502-1	6931.83636	7090	14053	mg/Kg	100.4	75	125	4.42	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343484													
WG343484PBS	PBS	05/10/13 9:00				U	%		-0.3	0.3			
WG343484LCSS	LCSS	05/10/13 12:42	PCN42343	4.19		4.2	%		80	120			
L11853-03DUP	DUP	05/10/13 20:08			1.4	1.4	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343484													
WG343484PBS	PBS	05/10/13 9:00				U	%		-0.3	0.3			
L11853-03DUP	DUP	05/10/13 20:08			1.4	1.3	%				7.4	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343996													
WG343996ICV	ICV	05/20/13 17:43	II130514-1	2		1.954	mg/L	97.7	90	110			
WG343996ICB	ICB	05/20/13 17:46				U	mg/L		-0.03	0.03			
WG343839PBS	PBS	05/20/13 17:58				U	mg/L		-0.03	0.03			
WG343839LFB	LFB	05/20/13 18:01	II130502-1	.5		.476	mg/L	95.2	85	115			
L11855-01MS	MS	05/20/13 18:07	II130502-1	.5	.33	.808	mg/L	95.6	75	125			
L11855-01MSD	MSD	05/20/13 18:10	II130502-1	.5	.33	.798	mg/L	93.6	75	125	1.25	20	
L11855-20DUP	DUP	05/20/13 19:27			.54	.564	mg/L				4.3	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343717													
WG343717ICV	ICV	05/15/13 18:57	II130514-1	2		1.966	mg/L	98.3	90	110			
WG343717ICB	ICB	05/15/13 19:00				U	mg/L		-0.03	0.03			
WG343640PBS	PBS	05/15/13 19:13				U	mg/Kg		-3	3			
WG343640LCSS	LCSS	05/15/13 19:16	PCN42473	162		165.4	mg/Kg		135	190			
WG343640LCSSD	LCSSD	05/15/13 19:19	PCN42473	162		170.7	mg/Kg		135	190	3.2	20	
L11855-09MS	MS	05/15/13 19:59	II130502-1	51	74	124.1	mg/Kg	98.2	75	125			
L11855-09MSD	MSD	05/15/13 20:02	II130502-1	51	74	123.7	mg/Kg	97.5	75	125	0.32	20	

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343476													
WG343476ICV	ICV	05/09/13 19:09	WI130411-3	2.416		2.334	mg/L	96.6	90	110			
WG343476ICB	ICB	05/09/13 19:10				U	mg/L		-0.06	0.06			
WG343478													
WG343478LFB1	LFB	05/09/13 22:54	WI130215-3	2		1.923	mg/Kg	96.2	90	110			
WG343419PBS	PBS	05/09/13 22:55				.11	mg/Kg		-0.3	0.3			
L11853-18AS	AS	05/09/13 23:13	WI130215-3	10	3.4	13.32	mg/Kg	99.2	90	110			
L11855-18DUP	DUP	05/09/13 23:27			3.4	3.34	mg/Kg				1.8	20	
WG343478LFB2	LFB	05/09/13 23:30	WI130215-3	2		1.887	mg/Kg	94.4	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343476													
WG343476ICV	ICV	05/09/13 19:09	WI130411-3	.609		.602	mg/L	98.9	90	110			
WG343476ICB	ICB	05/09/13 19:10				U	mg/L		-0.03	0.03			
WG343478													
WG343478LFB1	LFB	05/09/13 22:54	WI130215-3	1		.995	mg/Kg	99.5	90	110			
WG343419PBS	PBS	05/09/13 22:55				U	mg/Kg		-0.15	0.15			
L11853-18AS	AS	05/09/13 23:13	WI130215-3	5	.09	5.332	mg/Kg	104.8	90	110			
L11855-18DUP	DUP	05/09/13 23:27			.18	.116	mg/Kg				43.2	20	RA
WG343478LFB2	LFB	05/09/13 23:30	WI130215-3	1		.98	mg/Kg	98	90	110			

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343550													
WG343550ICV	ICV	05/11/13 16:33	WI121105-5	1.003		1.006	mg/L	100.3	90	110			
WG343550ICB	ICB	05/11/13 16:35				U	mg/L		-0.15	0.15			
WG343550LFB1	LFB	05/11/13 16:36	WI121218-3	1		1.087	mg/L	108.7	90	110			
WG343419PBS	PBS	05/11/13 16:37				U	mg/Kg		-0.9	0.9			
L11853-03MS	MS	05/11/13 16:39	25XNH3	625	32	62.8	mg/Kg	123.2	75	125			
L11855-18DUP	DUP	05/11/13 17:06			.4	.43	mg/Kg				7.2	20	RA
WG343550LFB2	LFB	05/11/13 17:08	WI121218-3	1		1.034	mg/L	103.4	90	110			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG344213													
WG344213ICV	ICV	05/23/13 12:09	WI130520-1	4		4.15	mg/L	103.8	90	110			
WG344213ICB	ICB	05/23/13 12:10				U	mg/L		-0.3	0.3			
WG344141PBS	PBS	05/23/13 12:15				.0047	%		-0.006	0.006			
WG344141LFB	LFB	05/23/13 12:16	WI130424-2	2.5		2.41	%	96.4	85	115			
L11855-05MS	MS	05/23/13 13:11	WI130424-2	.0325	.099	.1327	%	103.7	75	125			
L11855-06DUP	DUP	05/23/13 13:13			.076	.075	%				1.3	20	

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343597													
WG343597ICV	ICV	05/15/13 17:03	PCN40669	4		4.01	units	100.3	97	103			
L11855-20DUP	DUP	05/15/13 17:29			5.3	5.31	units				0.2	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343717													
WG343717ICV	ICV	05/15/13 18:57	II130514-1	20		20.21	mg/L	101.1	90	110			
WG343717ICB	ICB	05/15/13 19:00				U	mg/L		-0.9	0.9			
WG343640PBS	PBS	05/15/13 19:13				U	mg/Kg		-90	90			
WG343640LCSS	LCSS	05/15/13 19:16	PCN42473	2600		2773	mg/Kg		1720	3470			
WG343640LCSSD	LCSSD	05/15/13 19:19	PCN42473	2600		2949	mg/Kg		1720	3470	6.2	20	
L11855-09MS	MS	05/15/13 19:59	II130502-1	10197.10422	2890	12820	mg/Kg	97.4	75	125			
L11855-09MSD	MSD	05/15/13 20:02	II130502-1	10197.10422	2890	12857	mg/Kg	97.7	75	125	0.29	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343930													
WG343930PBS	PBS	05/18/13 10:00				U	%		99.9	100.1			
L11855-01DUP	DUP	05/18/13 14:34			95.7	95.42	%				0.3	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11855-05	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11855-06	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11855-07	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11855-08	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L11855-15	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11855-16	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L11855-17	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11855-18	WG343484	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11855
Date Received: 05/01/2013 09:00
Received By: ksj
Date Printed: 5/22/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		

`A change was made in the date/time section prior to ACZ custody.`

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2599	11.8	16	Yes
2932	11.9	14	Yes
3076	11.7	16	Yes
3176	8.9	12	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L11855

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L11855 Chain of Custody

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

nvoice to:

lame: Pam Pinson	Address: P.O. Box 10
ompany: Chino Mines Company	Bayard, NM 88023
-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

sample(s) received past holding time (HT), or if insufficient HT remains to complete nalysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
"NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

re samples for CO DW Compliance Monitoring? YES ☐ NO ☒
yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-EREF5 0-6	4.24.13 11:17	SO	1	x	x	x					
STS-AMD-2013S-EREF6 0-6	4.24.13 11:28	SO	1	x	x	x					
STS-AMD-2013S-EREF7 0-6	4.24.13 1123	SO	1	x	x	x					
STS-AMD-2013S-EREF8 0-6	4.24.13 11:21	SO	1	x	x	x					
STS-AMD-2013S-NREF1 0-6	4.24.13 1708 ~~1123~~	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NREF2 0-6	17:~~07~~ 28	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NREF1 6-12	17:45	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NREF2 18-24	1755	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NREF3 0-6	1723	SO	1	x	x	x					
STS-AMD-2013S-NREF4 0-6	1721	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
M Bauer	4.25.13 1500	LCB	5.1.13 8:52

4/11

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L11855

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Matt Bauer

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-NREF5 0-6	4.24.12 17:11	SO	1	x	x	x					
STS-AMD-2013S-NREF6 0-6	1746	SO	1	x	x	x					
STS-AMD-2013S-NREF7 0-6	1711	SO	1	x	x	x					
STS-AMD-2013S-NREF8 0-6	1728	SO	1	x	x	x					
STS-AMD-2013S-NEREF1 0-	4.25.12 1016	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NEREF2 0-	4/25 10:40 ~~1707~~	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NEREF1 6-12	4/25 11:12	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NEREF2 18-24	4/25 11:05	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013S-NEREF3 0-	4.25.12 1036	SO	1	x	x	x					
STS-AMD-2013S-NEREF4 0-	4/25 1020	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500	LCO	5.1.13 8:52

8/11

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

May 30, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L11856

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 01, 2013. This project has been assigned to ACZ's project number, L11856. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11856. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 29, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11856-01***
Project ID:	ZN000001M5	Date Sampled:	*04/25/13 10:25*
Sample ID:	STS-AMD-2013S-NEREF5 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 9:31	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.22		*	mg/L	0.01	0.05	05/20/13 20:11	aeb
Copper, total (3050)	M6010B ICP	102	2000		*	mg/Kg	1	5	05/15/13 14:26	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.0		*	units	0.1	0.1	05/15/13 17:35	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.2		*	%	0.1	0.5	05/18/13 15:38	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 1:05	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:03	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:13	cra
Synthetic Precip. Leaching Procedure	M1312								05/16/13 21:37	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013S-NEREF6 0-6
ACZ Sample ID:	***L11856-02***
Date Sampled:	*04/25/13 10:30*
Date Received:	*05/01/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:17	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.53		*	mg/L	0.01	0.05	05/20/13 20:20	aeb
Copper, total (3050)	M6010B ICP	102	3130		*	mg/Kg	1	5	05/15/13 14:29	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.4		*	units	0.1	0.1	05/15/13 17:37	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.9		*	%	0.1	0.5	05/18/13 21:17	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 2:26	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:24	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:16	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 0:40	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013S-NEREF7 0-6

ACZ Sample ID: ***L11856-03***
Date Sampled: *04/25/13 10:29*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:33	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	2.98		*	mg/L	0.01	0.05	05/20/13 20:23	aeb
Copper, total (3050)	M6010B ICP	102	2520		*	mg/Kg	1	5	05/15/13 14:35	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.2		*	units	0.1	0.1	05/15/13 17:38	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.5		*	%	0.1	0.5	05/19/13 0:07	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 3:47	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 11:45	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:20	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 1:42	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L11856-04***
Project ID:	ZN000001M5	Date Sampled:	*04/25/13 10:35*
Sample ID:	STS-AMD-2013S-NEREF8 0-6	Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 10:48	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.70		*	mg/L	0.01	0.05	05/20/13 20:26	aeb
Copper, total (3050)	M6010B ICP	102	2640		*	mg/Kg	1	5	05/15/13 14:39	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.5		*	units	0.1	0.1	05/15/13 17:40	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.8		*	%	0.1	0.5	05/19/13 2:56	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 5:08	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 12:06	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:23	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 2:43	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP1 (042313)

ACZ Sample ID: ***L11856-05***
Date Sampled: *04/23/13 00:00*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 16:18	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:04	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	6440			mg/Kg	20	100	05/15/13 14:42	aeb
Copper (1312)	M6010B ICP	1	0.25		*	mg/L	0.01	0.05	05/20/13 20:29	aeb
Copper, total (3050)	M6010B ICP	101	2880		*	mg/Kg	1	5	05/15/13 14:42	aeb
Potassium, total (3050)	M6010B ICP	101	3290			mg/Kg	30	200	05/15/13 14:42	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.0		*	%	0.1	0.5	05/10/13 10:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.0		*	%	0.1	0.5	05/10/13 10:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 17:41	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	98.2		*	%	0.1	0.5	05/19/13 5:45	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 6:29	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 12:27	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:26	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 3:44	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 10:21	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.0	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	1.0	B	*	mg/Kg	0.5	3	05/09/13 23:31	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:31	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	26		*	mg/Kg	1	10	05/11/13 17:10	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	152	0.080	H	*	%	0.002	0.008	05/23/13 13:23	bsu

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	*L11856-06*
Sample ID:	DUP2 (042313)	Date Sampled:	*04/23/13 00:00*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 16:39	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:19	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	13000			mg/Kg	20	100	05/15/13 14:45	aeb
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	05/20/13 20:32	aeb
Copper, total (3050)	M6010B ICP	102	776		*	mg/Kg	1	5	05/15/13 14:45	aeb
Potassium, total (3050)	M6010B ICP	102	3930			mg/Kg	30	200	05/15/13 14:45	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	05/10/13 10:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	05/10/13 10:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.8		*	units	0.1	0.1	05/15/13 17:42	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.4		*	%	0.1	0.5	05/19/13 8:35	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 7:50	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 12:48	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:30	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 4:45	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 11:42	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.1	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	1.1	B	*	mg/Kg	0.5	3	05/09/13 23:32	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:32	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 17:11	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	138	0.121	H	*	%	0.001	0.007	05/23/13 13:24	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP3 (042413)

ACZ Sample ID: ***L11856-07***
Date Sampled: *04/24/13 00:00*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 16:59	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:35	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	4970			mg/Kg	20	100	05/15/13 14:54	aeb
Copper (1312)	M6010B ICP	1	0.42		*	mg/L	0.01	0.05	05/20/13 20:42	aeb
Copper, total (3050)	M6010B ICP	101	1070		*	mg/Kg	1	5	05/15/13 14:54	aeb
Potassium, total (3050)	M6010B ICP	101	4510			mg/Kg	30	200	05/15/13 14:54	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	05/10/13 10:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	05/10/13 10:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.7		*	units	0.1	0.1	05/15/13 17:44	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.5		*	%	0.1	0.5	05/19/13 11:24	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 9:11	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 13:09	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:33	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 6:48	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 13:03	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		43.8			mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	44.1		*	mg/Kg	0.5	3	05/09/13 23:44	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.30		*	mg/Kg	0.05	0.3	05/09/13 23:33	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	1.4	B	*	mg/Kg	0.3	3	05/11/13 17:12	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	154	0.162	H	*	%	0.002	0.008	05/23/13 13:25	bsu

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP4 (042413)

ACZ Sample ID: ***L11856-08***
Date Sampled: *04/24/13 00:00*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor								05/22/13 17:20	lhb
Total Hot Plate Digestion	M3010A ICP								05/20/13 11:50	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	4300			mg/Kg	20	100	05/15/13 14:57	aeb
Copper (1312)	M6010B ICP	1	0.12		*	mg/L	0.01	0.05	05/20/13 20:45	aeb
Copper, total (3050)	M6010B ICP	102	941		*	mg/Kg	1	5	05/15/13 14:57	aeb
Potassium, total (3050)	M6010B ICP	102	4270			mg/Kg	30	200	05/15/13 14:57	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/10/13 10:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	05/10/13 10:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.8		*	units	0.1	0.1	05/15/13 17:45	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.7		*	%	0.1	0.5	05/19/13 14:14	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 10:32	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 13:30	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:36	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 7:49	cdb/cra
Water Extraction	ASA No. 9 10-2.3.2								05/09/13 14:24	mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.7	B		mg/Kg	0.5	3	05/29/13 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25	1.7	B	*	mg/Kg	0.5	3	05/09/13 23:37	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25		U	*	mg/Kg	0.3	1	05/09/13 23:37	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	05/11/13 17:16	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	164	0.080	H	*	%	0.002	0.008	05/23/13 13:27	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP5 (042413)

ACZ Sample ID: ***L11856-09***
Date Sampled: *04/24/13 00:00*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:06	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.20		*	mg/L	0.01	0.05	05/20/13 20:48	aeb
Copper, total (3050)	M6010B ICP	102	765		*	mg/Kg	1	5	05/15/13 15:00	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	6.2		*	units	0.1	0.1	05/15/13 17:47	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	05/19/13 17:03	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 11:53	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 13:51	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:40	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 8:50	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11856-10***
Sample ID:	DUP6 (042413)	Date Sampled:	*04/24/13 00:00*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.19		*	mg/L	0.01	0.05	05/20/13 20:54	aeb
Copper, total (3050)	M6010B ICP	102	1050		*	mg/Kg	1	5	05/15/13 15:10	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.4		*	units	0.1	0.1	05/15/13 17:48	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	94.3		*	%	0.1	0.5	05/19/13 19:53	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 13:14	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 14:54	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:43	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 9:51	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L11856-11***
Sample ID:	DUP7 (042513)	Date Sampled:	*04/25/13 00:00*
		Date Received:	*05/01/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:37	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.78		*	mg/L	0.01	0.05	05/20/13 20:57	aeb
Copper, total (3050)	M6010B ICP	102	4260		*	mg/Kg	1	5	05/15/13 15:13	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	4.8		*	units	0.1	0.1	05/15/13 17:51	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.9		*	%	0.1	0.5	05/19/13 22:42	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 14:35	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:15	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:46	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 10:52	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP8 (042513)

ACZ Sample ID: ***L11856-12***
Date Sampled: *04/25/13 00:00*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 12:53	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.23		*	mg/L	0.01	0.05	05/20/13 21:00	aeb
Copper, total (3050)	M6010B ICP	103	3890		*	mg/Kg	1	5	05/15/13 15:16	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	5.0		*	units	0.1	0.1	05/15/13 17:52	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	95.5		*	%	0.1	0.5	05/20/13 1:31	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 15:56	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:36	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:50	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 11:54	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PCU-2013-1 0-6

ACZ Sample ID: ***L11856-13***
Date Sampled: *04/24/13 19:20*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:08	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B	*	mg/L	0.01	0.05	05/20/13 21:03	aeb
Copper, total (3050)	M6010B ICP	102	389		*	mg/Kg	1	5	05/15/13 15:19	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.6		*	units	0.1	0.1	05/15/13 17:54	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.7		*	%	0.1	0.5	05/20/13 4:21	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 17:18	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 15:57	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:53	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 12:55	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PCU-2013-2 0-6

ACZ Sample ID: ***L11856-14***
Date Sampled: *04/24/13 18:50*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:24	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	05/20/13 21:06	aeb
Copper, total (3050)	M6010B ICP	102	190		*	mg/Kg	1	5	05/15/13 15:22	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.7		*	units	0.1	0.1	05/15/13 17:55	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	96.5		*	%	0.1	0.5	05/20/13 7:10	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 18:39	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 16:18	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 14:56	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 13:56	cdb/cra

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PCU-2013-3 0-6

ACZ Sample ID: ***L11856-15***
Date Sampled: *04/24/13 19:56*
Date Received: *05/01/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								05/20/13 13:39	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07		*	mg/L	0.01	0.05	05/20/13 21:09	aeb
Copper, total (3050)	M6010B ICP	102	342		*	mg/Kg	1	5	05/15/13 15:31	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2	1	7.8		*	units	0.1	0.1	05/15/13 17:57	mjj
Solids, Percent	CLPSOW390, PART F, D-98	1	97.7		*	%	0.1	0.5	05/20/13 10:00	cdb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								05/07/13 20:00	mjj
Digestion - Hot Plate	M3050B ICP								05/14/13 16:39	mjj
Saturated Paste Extraction	USDA No. 60 (2)								05/09/13 12:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/08/13 15:00	cra
Synthetic Precip. Leaching Procedure	M1312								05/17/13 14:57	cdb/cra

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343723													
WG343723ICV	ICV	05/15/13 14:01	II130514-1	100		100.65	mg/L	100.7	90	110			
WG343723ICB	ICB	05/15/13 14:04				U	mg/L		-0.6	0.6			
WG343641PBS	PBS	05/15/13 14:17				U	mg/Kg		-60	60			
WG343641LCSS	LCSS	05/15/13 14:20	PCN42473	7890		8558	mg/Kg		6500	9290			
WG343641LCSSD	LCSSD	05/15/13 14:23	PCN42473	7890		8081	mg/Kg		6500	9290	5.7	20	
L11856-09MS	MS	05/15/13 15:03	II130502-1	6931.83636	8800	16001	mg/Kg	103.9	75	125			
L11856-09MSD	MSD	05/15/13 15:06	II130502-1	6931.83636	8800	16954	mg/Kg	117.6	75	125	5.78	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343485													
L11856-05DUP	DUP	05/10/13 10:00			1	1.1	%				9.5	20	
WG343485LCSS	LCSS	05/10/13 10:00	PCN42343	4.19		4.4	%		80	120			
WG343485PBS	PBS	05/10/13 10:00				U	%		-0.3	0.3			

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343485													
L11856-05DUP	DUP	05/10/13 10:00			1	1	%				0	20	ZQ
WG343485PBS	PBS	05/10/13 10:00				U	%		-0.3	0.3			

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343997													
WG343997ICV	ICV	05/20/13 19:49	II130514-1	2		1.973	mg/L	98.7	90	110			
WG343997ICB	ICB	05/20/13 19:52				U	mg/L		-0.03	0.03			
WG343840PBS	PBS	05/20/13 20:05				.016	mg/L		-0.03	0.03			
WG343840LFB	LFB	05/20/13 20:08	II130502-1	.5		.486	mg/L	97.2	85	115			
L11856-01MS	MS	05/20/13 20:14	II130502-1	.5	.22	.696	mg/L	95.2	75	125			
L11856-01MSD	MSD	05/20/13 20:17	II130502-1	.5	.22	.69	mg/L	94	75	125	0.87	20	
L11856-15DUP	DUP	05/20/13 21:18			.07	.032	mg/L				74.5	20	RA

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343723													
WG343723ICV	ICV	05/15/13 14:01	II130514-1	2		1.938	mg/L	96.9	90	110			
WG343723ICB	ICB	05/15/13 14:04				U	mg/L		-0.03	0.03			
WG343641PBS	PBS	05/15/13 14:17				U	mg/Kg		-3	3			
WG343641LCSS	LCSS	05/15/13 14:20	PCN42473	162		156.5	mg/Kg		135	190			
WG343641LCSSD	LCSSD	05/15/13 14:23	PCN42473	162		155.5	mg/Kg		135	190	0.6	20	
L11856-09MS	MS	05/15/13 15:03	II130502-1	51	765	729.8	mg/Kg	-69	75	125			M3
L11856-09MSD	MSD	05/15/13 15:06	II130502-1	51	765	728.2	mg/Kg	-72.2	75	125	0.22	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343476													
WG343476ICV	ICV	05/09/13 19:09	WI130411-3	2.416		2.334	mg/L	96.6	90	110			
WG343476ICB	ICB	05/09/13 19:10				U	mg/L		-0.06	0.06			
WG343478													
WG343478LFB1	LFB	05/09/13 22:54	WI130215-3	2		1.923	mg/Kg	96.2	90	110			
L11853-18AS	AS	05/09/13 23:13	WI130215-3	10	3.4	13.32	mg/Kg	99.2	90	110			
WG343420PBS	PBS	05/09/13 23:29				U	mg/Kg		-0.3	0.3			
WG343478LFB2	LFB	05/09/13 23:30	WI130215-3	2		1.887	mg/Kg	94.4	90	110			
L11856-08DUP	DUP	05/09/13 23:38			1.7	1.7	mg/Kg				0	20	RA

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343476													
WG343476ICV	ICV	05/09/13 19:09	WI130411-3	.609		.602	mg/L	98.9	90	110			
WG343476ICB	ICB	05/09/13 19:10				U	mg/L		-0.03	0.03			
WG343478													
WG343478LFB1	LFB	05/09/13 22:54	WI130215-3	1		.995	mg/Kg	99.5	90	110			
L11853-18AS	AS	05/09/13 23:13	WI130215-3	5	.09	5.332	mg/Kg	104.8	90	110			
WG343420PBS	PBS	05/09/13 23:29				U	mg/Kg		-0.15	0.15			
WG343478LFB2	LFB	05/09/13 23:30	WI130215-3	1		.98	mg/Kg	98	90	110			
L11856-08DUP	DUP	05/09/13 23:38			U	U	mg/Kg				0	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343550													
WG343550ICV	ICV	05/11/13 16:33	WI121105-5	1.003		1.006	mg/L	100.3	90	110			
WG343550ICB	ICB	05/11/13 16:35				U	mg/L		-0.15	0.15			
WG343550LFB1	LFB	05/11/13 16:36	WI121218-3	1		1.087	mg/L	108.7	90	110			
WG343420PBS	PBS	05/11/13 17:07				U	mg/Kg		-0.9	0.9			
WG343550LFB2	LFB	05/11/13 17:08	WI121218-3	1		1.034	mg/L	103.4	90	110			
L11856-07MS	MS	05/11/13 17:13	NH35X	25	1.4	6.74	mg/Kg	106.8	75	125			
L11856-08DUP	DUP	05/11/13 17:17			U	U	mg/Kg				0	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG344213													
WG344213ICV	ICV	05/23/13 12:09	WI130520-1	4		4.15	mg/L	103.8	90	110			
WG344213ICB	ICB	05/23/13 12:10				U	mg/L		-0.3	0.3			
WG344141PBS	PBS	05/23/13 12:15				.0047	%		-0.006	0.006			
WG344141LFB	LFB	05/23/13 12:16	WI130424-2	2.5		2.41	%	96.4	85	115			
L11855-05MS	MS	05/23/13 13:11	WI130424-2	.0325	.099	.1327	%	103.7	75	125			
L11855-06DUP	DUP	05/23/13 13:13			.076	.075	%				1.3	20	

pH, Saturated Paste

EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343598													
WG343598ICV	ICV	05/15/13 17:34	PCN40669	4		3.98	units	99.5	97	103			
L11856-15DUP	DUP	05/15/13 17:58			7.8	7.83	units				0.4	20	

Potassium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343723													
WG343723ICV	ICV	05/15/13 14:01	II130514-1	20		19.95	mg/L	99.8	90	110			
WG343723ICB	ICB	05/15/13 14:04				U	mg/L		-0.9	0.9			
WG343641PBS	PBS	05/15/13 14:17				U	mg/Kg		-90	90			
WG343641LCSS	LCSS	05/15/13 14:20	PCN42473	2600		3111	mg/Kg		1720	3470			
WG343641LCSSD	LCSSD	05/15/13 14:23	PCN42473	2600		2957	mg/Kg		1720	3470	5.1	20	
L11856-09MS	MS	05/15/13 15:03	II130502-1	10197.10422	3730	13692	mg/Kg	97.7	75	125			
L11856-09MSD	MSD	05/15/13 15:06	II130502-1	10197.10422	3730	15428	mg/Kg	114.7	75	125	11.92	20	

Solids, Percent

CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG343931													
WG343931PBS	PBS	05/18/13 10:00				U	%		99.9	100.1			
L11856-01DUP	DUP	05/18/13 18:28			96.2	96	%				0.2	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11856***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11856-01	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-02	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-03	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-04	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11856-05	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343485	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11856-06	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343485	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11856-07	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343485	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11856-08	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG343485	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG343478	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343550	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	D1	Sample required dilution due to matrix.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG344213	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L11856-09	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-10	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L11856***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11856-11	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-12	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-13	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-14	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L11856-15	WG343997	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG343723	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L11856
Date Received: 05/01/2013 08:52
Received By: ksj
Date Printed: 5/22/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

A change was made in the page 2 lines 3-6 and page 3 line 4 section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2599	11.8	16	Yes
2932	11.9	14	Yes
3076	11.7	16	Yes
3176	8.9	12	Yes
3538	12.8	14	Yes
3574	11	15	Yes
3737	8.8	15	Yes
3921	13.3	16	Yes

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L11856
Date Received:	05/01/2013 08:52
Received By:	ksj
Date Printed:	5/22/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L-11856

CHAIN of CUSTODY

L11856 Chain of Custody

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

voice to:

ame: Pam Pinson
ompany: Chino Mines Company
-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

sample(s) received past holding time (HT), or if insufficient HT remains to complete
ialysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
"NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"
indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

'e samples for CO DW Compliance Monitoring? YES ☐
yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013S-NEREF5 0-	4.25.13 1025	SO	1	x	x	x					
STS-AMD-2013S-NEREF6 0-	1030	SO	1	x	x	x					
STS-AMD-2013S-NEREF7 0-	1029	SO	1	x	x	x					
STS-AMD-2013S-NEREF8 0-	1035	SO	1	x	x	x					
DUP1 (042313)	4.23.13 —	SO	1	x	x	x	x	x	x	x	
DUP2 (042313)	4.23.13 —	SO	1	x	x	x	x	x	x	x	
DUP3 (042413)	4.24.13 —	SO	1	x	x	x	x	x	x	x	
DUP4 (042413)	4.24.13 —	SO	1	x	x	x	x	x	x	x	
DUP5 (042413)	4.24.13 —	SO	1	x	x	x					
DUP6 (042413)	4.24.13 —	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500		5.1.13 8:52

9/11

ACZ Laboratories, Inc. 111856

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Matt Bauer

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Total Copper						
DUP7 (042513)	4.25.13 —	SO	1	x	x	x							
DUP8 (042513)	4.25.13 —	SO	1	x	x	x							
~~RINSATE1 (042913)~~	~~4.29.13 12:26~~	~~W~~	~~1~~				x						MB
~~RINSATE2 (042513)~~	~~4.25.13 08:16~~	~~W~~	~~1~~				x						MB
~~RINSATE3 (042513)~~	~~4.25.13 08:40~~	~~W~~	~~1~~				x						Mb
~~RINSATE4 (042513)~~	~~4.25.13 10:50~~	~~W~~	~~1~~				x						Mb

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.29.13 1500	UEG	5.1.13 8:52

10/11

ACZ Laboratories, Inc. L11856

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.
YES ☒
NO ☐

Are samples for CO DW Compliance Monitoring? If yes, please include state forms. Results will be reported to PQL.
YES ☐
NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-PCU-2013-1 0-6	4.24.13 1920	SO	1 /	x	x	x					
STS-PCU-2013-2 0-6	4.24.13 1850	SO	1 /	x	x	x					
STS-PCU-2013-3 0-6	4.24.13 1956	SO	1 /	x	x	x					
~~STS-AMD-2013S-W-RSF3 12-18~~	~~4/23/2013 14:31~~	~~SO~~	~~1~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	MB

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.25.13 1500	LCO	5.1.13 8:52

11/11

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 15, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L15301

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15301. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15301. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 15, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15301-01***
Sample ID:	STS-PH-2013-FID7	Date Sampled:	*10/25/13 13:10*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	375			mg/Kg	1	5	11/07/13 19:06	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		2	B		t CaCO3/Kt	1	5	11/14/13 17:01	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		1			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-1			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.1	B	*	%	0.1	0.5	11/12/13 16:41	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5.4			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	22			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.2		*	%	0.1	0.5	10/31/13 20:16	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.04	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.01	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.01	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1	0.01	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.05	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.04	B	*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:10	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 14:35	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 10:20	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 15:00	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 15:00	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15301-02***
Sample ID:	STS-PH-2013-FID8	Date Sampled:	*10/24/13 11:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	102	358			mg/Kg	1	5	11/07/13 19:16	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		11			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		17			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		6			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	1.7		*	%	0.1	0.5	11/12/13 18:35	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6.5			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.7			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	94.2		*	%	0.1	0.5	10/31/13 22:49	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.23		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.20		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1	0.11		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.34		*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.23		*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:14	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 14:53	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 11:11	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 15:16	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 15:16	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15301-03***
Sample ID:	STS-PH-2013-FID10	Date Sampled:	*10/23/13 15:15*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	1780			mg/Kg	1	5	11/07/13 19:22	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		4	B		t CaCO3/Kt	1	5	11/14/13 17:01	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-2			t CaCO3/Kt	1	5	11/14/13 17:01	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.2	B	*	%	0.1	0.5	11/12/13 19:32	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.9			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	94.6		*	%	0.1	0.5	11/01/13 0:06	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.13		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.11		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.13		*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.13		*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:18	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 15:11	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 11:28	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 15:33	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 15:33	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-FID15

ACZ Sample ID: ***L15301-04***
Date Sampled: *10/23/13 10:50*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	1950			mg/Kg	1	5	11/07/13 19:25	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		9			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		5			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-4			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.5		*	%	0.1	0.5	11/12/13 20:29	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5.2			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.8			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.8		*	%	0.1	0.5	11/01/13 1:22	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.24		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.21		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1	0.04	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.28		*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.24		*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:23	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 15:29	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 11:45	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 15:50	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 15:50	spl

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15301-05***
Project ID:	ZN000001M5	Date Sampled:	*10/23/13 11:10*
Sample ID:	STS-PH-2013-FID16	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	100	1290			mg/Kg	1	5	11/07/13 19:34	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		7			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		0.0			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-7			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1		U	*	%	0.1	0.5	11/12/13 21:25	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	4.7			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.7			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.9		*	%	0.1	0.5	11/01/13 2:39	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.16		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.03	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.13		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1	0.06	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.22		*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.16		*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:27	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 15:47	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 12:02	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 16:06	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 16:06	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-FID18

ACZ Sample ID: ***L15301-06***
Date Sampled: *10/24/13 15:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	100	141			mg/Kg	1	5	11/07/13 19:37	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		3	B		t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		0.0			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-3			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1		U	*	%	0.1	0.5	11/12/13 22:22	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	4.3			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.8			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.6		*	%	0.1	0.5	11/01/13 3:55	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.06	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.01	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.01	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.05	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1	0.02	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.08	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.06	B	*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:32	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 16:05	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 12:19	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 16:23	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 16:23	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15301-07***
Sample ID:	STS-PH-2013-FID22	Date Sampled:	*10/25/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	296			mg/Kg	1	5	11/07/13 19:40	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		6			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		12			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		6			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	1.2		*	%	0.1	0.5	11/12/13 23:19	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6.3			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.7			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	95.9		*	%	0.1	0.5	11/01/13 5:12	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.13		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.11		*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Sulfate		1	0.06	B	*	%	0.01	0.1	11/06/13 0:00	mss2
Sulfur Total		1	0.19		*	%	0.01	0.1	11/06/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.13		*	%	0.01	0.1	11/06/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:36	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 16:23	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 12:36	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 16:40	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 16:40	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-FID28

ACZ Sample ID: ***L15301-08***
Date Sampled: *10/22/13 09:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	318			mg/Kg	1	5	11/07/13 19:43	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		6			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		90			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		84			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	9		*	%	0.1	0.5	11/13/13 2:16	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6.8			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.3			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	97.1		*	%	0.1	0.5	11/01/13 6:28	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.19		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.17		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:41	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 16:41	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 12:53	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 16:56	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 16:56	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15301-09***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 17:00*
Sample ID:	STS-PH-2013-FID37	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	432			mg/Kg	1	5	11/07/13 19:46	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.2	B	*	%	0.1	0.5	11/13/13 1:13	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5.3			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.8			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	95.2		*	%	0.1	0.5	11/01/13 7:45	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:45	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 16:59	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 13:10	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 17:13	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 17:13	spl

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15301-10***
Sample ID:	STS-PH-2013-FID101	Date Sampled:	*10/24/13 14:35*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	100	221			mg/Kg	1	5	11/07/13 19:49	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		9			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		0.0			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-9			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1		U	*	%	0.1	0.5	11/13/13 2:10	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	4.2			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.6			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	97.1		*	%	0.1	0.5	11/01/13 9:01	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.04	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.04	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.14		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1	0.12		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.30		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:50	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 17:17	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 13:27	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 17:30	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 17:30	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-FID102

ACZ Sample ID: ***L15301-11***
Date Sampled: *10/24/13 13:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	171			mg/Kg	1	5	11/07/13 19:52	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		15			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-13			t CaCO3/Kt	1	5	11/14/13 17:02	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.2	B	*	%	0.1	0.5	11/13/13 3:07	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	3.7			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.5			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.1		*	%	0.1	0.5	11/01/13 10:18	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.23		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.03	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.03	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.20		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1	0.25		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.48		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.23		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:54	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 17:35	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 13:44	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 17:46	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 17:46	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15301-12***
Project ID:	ZN000001M5	Date Sampled:	*10/23/13 18:00*
Sample ID:	STS-PH-2013-FID105	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	816			mg/Kg	1	5	11/07/13 19:56	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		5			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-3			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.2	B	*	%	0.1	0.5	11/13/13 4:04	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	4.7			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.4			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	94.9		*	%	0.1	0.5	11/01/13 11:34	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.12		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.04	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.04	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.08	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1	0.04	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.16		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.12		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 16:58	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 17:53	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 14:01	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 18:03	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 18:03	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15301-13***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 13:40*
Sample ID:	STS-PH-2013-FID106	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	247			mg/Kg	1	5	11/07/13 19:59	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.2	B	*	%	0.1	0.5	11/13/13 5:01	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	4.6			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.1			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.0		*	%	0.1	0.5	11/01/13 12:51	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.03	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.03	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:03	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 18:11	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 14:18	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 18:20	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 18:20	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15301-14***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 14:30*
Sample ID:	STS-PH-2013-REFPLOT1	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	605			mg/Kg	1	5	11/07/13 20:02	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		166			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		166			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	16.6		*	%	0.1	0.5	11/13/13 7:21	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	7.5			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.1			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	97.2		*	%	0.1	0.5	11/01/13 14:07	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.04	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:07	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 18:29	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 14:35	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 18:36	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 18:36	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-REFPLOT2

ACZ Sample ID: ***L15301-15***
Date Sampled: *10/25/13 15:50*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	578			mg/Kg	1	5	11/07/13 20:11	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		5			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		5			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.5		*	%	0.1	0.5	11/13/13 5:58	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.3			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	96.6		*	%	0.1	0.5	11/01/13 15:24	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:12	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 18:47	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 14:52	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 18:53	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 18:53	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-PH-2013-REFPLOT3

ACZ Sample ID: ***L15301-16***
Date Sampled: *10/24/13 11:20*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	102	1090			mg/Kg	1	5	11/07/13 20:14	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		4	B		t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		11			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		7			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	1.1		*	%	0.1	0.5	11/13/13 6:54	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6.7			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.3			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	91.3		*	%	0.1	0.5	11/01/13 16:40	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.10		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.08	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.12		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.10		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:16	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 19:05	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 15:09	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 19:10	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 19:10	spl

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-REFPLOT4

ACZ Sample ID: ***L15301-17***
Date Sampled: *10/25/13 13:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	923			mg/Kg	1	5	11/07/13 20:17	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		7			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		3			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-4			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.3	B	*	%	0.1	0.5	11/13/13 7:51	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.4			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	92.6		*	%	0.1	0.5	11/01/13 17:57	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.03	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.03	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.15		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1	0.05	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.23		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:21	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 19:23	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 15:25	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 19:26	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 19:26	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-ERA02

ACZ Sample ID: ***L15301-18***
Date Sampled: *10/24/13 10:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	420			mg/Kg	1	5	11/07/13 20:20	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		18			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		18			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	1.8		*	%	0.1	0.5	11/13/13 9:54	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	7			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.2			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	94.2		*	%	0.1	0.5	11/01/13 19:13	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.07	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.05	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1		U	*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:25	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 19:41	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 15:42	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 19:43	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 19:43	spl

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15301-19***
Sample ID:	STS-PH-2013-ERA03	Date Sampled:	*10/23/13 17:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	807			mg/Kg	1	5	11/07/13 20:23	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		9			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		3			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-6			t CaCO3/Kt	1	5	11/14/13 17:03	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.3	B	*	%	0.1	0.5	11/13/13 8:48	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6			units	0.1	0.1	11/13/13 0:00	mss2
pH measured at		1	21.1			C	0.1	0.1	11/13/13 0:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	11/01/13 20:30	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur HNO3 Residue		1	0.06	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Organic Residual		1	0.06	B	*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.12		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Sulfate		1	0.10		*	%	0.01	0.1	11/07/13 0:00	mss2
Sulfur Total		1	0.28		*	%	0.01	0.1	11/07/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.18		*	%	0.01	0.1	11/07/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/31/13 17:30	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/05/13 19:59	spl
Digestion - Hot Plate	M3050B ICP								11/06/13 15:59	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/05/13 20:00	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/05/13 20:00	spl

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354475													
WG354475ICV	ICV	11/07/13 18:42	II130820-1	2		1.968	mg/L	98.4	90	110			
WG354475ICB	ICB	11/07/13 18:45				U	mg/L		-0.03	0.03			
WG354384PBS	PBS	11/07/13 18:57				U	mg/Kg		-3	3			
WG354384LCSS	LCSS	11/07/13 19:00	PCN42472	162		162.6	mg/Kg		135	190			
WG354384LCSSD	LCSSD	11/07/13 19:03	PCN42472	162		164.1	mg/Kg		135	190	0.9	20	
L15301-01MS	MS	11/07/13 19:09	II131029-2	50.5	375	436.1	mg/Kg	121	75	125			
L15301-01MSD	MSD	11/07/13 19:13	II131029-2	50.5	375	429.9	mg/Kg	108.7	75	125	1.43	20	

Neutralization Potential as CaCO3 M600/2-78-054 3.2.3 - Modified (No Heat)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354638													
WG354638PBS	PBS	11/12/13 14:47				U	%		-0.1	0.1			
WG354638LCSS	LCSS	11/12/13 15:44	PCN33453	100		100	%	100	80	120			
L15301-01DUP	DUP	11/12/13 17:38			.1	.15	%				40	20	RA
WG354635													
WG354635PBS	PBS	11/12/13 21:10				U	%		-0.1	0.1			
WG354635LCSS	LCSS	11/12/13 23:43	PCN33453	100		102.5	%	102.5	80	120			
L15301-08DUP	DUP	11/13/13 4:49			9	9	%				0	20	

Ph M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354823													
WG354823ICV	ICV	11/13/13 16:01	PCN42578	4		3.95	units	98.8	97	103			
L15301-01DUP	DUP	11/13/13 16:12			5.4	5.37	units				0.6	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354097													
WG354097PBS	PBS	10/31/13 19:00				U	%		99.9	100.1			
L15301-01DUP	DUP	10/31/13 21:33			96.2	96.02	%				0.2	20	

Sulfur Organic Residual M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354385													
L15301-01DUP	DUP	11/06/13 14:17			.01	.01	%				0	20	RA

Sulfur Pyritic Sulfide M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354385													
L15301-01DUP	DUP	11/06/13 14:17			.03	.03	%				0	20	RA

Sulfur Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354385													
L15301-01DUP	DUP	11/06/13 14:17			.01	U	%				200	20	RA

Sulfur Total M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354385													
WG354385LCSS	LCSS	11/06/13 11:25	PCN42346	4.07		4.57	%	112.3					
L15301-01DUP	DUP	11/06/13 14:17			.05	.04	%				22.2	20	RA

Total Sulfur Minus Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354385													
L15301-01DUP	DUP	11/06/13 14:17			.04	.04	%				0	20	RA

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15301***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-01	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-02	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-03	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-04	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-05	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-06	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-07	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-08	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-09	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-10	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-11	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-12	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-13	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-14	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-15	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-16	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-17	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15301-18	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15301-19	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354385	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.		
	Solids, Percent	CLPSOW390, PART F, D-98
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.		
	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)
	Solids, Percent	CLPSOW390, PART F, D-98
	Sulfur HCl Residue	M600/2-78-054 3.2.4-MOD
	Sulfur HNO3 Residue	M600/2-78-054 3.2.4-MOD
	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD
	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD
	Sulfur Sulfate	M600/2-78-054 3.2.4-MOD
	Sulfur Total	M600/2-78-054 3.2.4-MOD
	Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15301
Date Received: 10/30/2013 10:02
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

```
A change was made in the ID Line 6 section prior to ACZ
custody.
```

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
4057           10.8           13               Yes
NA18647        10.6           15               N/A
```

Was ice present in the shipment container(s)?

```
No - Wet or gel ice was not present in the shipment container(s).
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

L15301

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS
E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION | **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
STS-PH-2013-FID7	10/25/13 1310	SO	1	x	x	x	x				
STS-PH-2013-FID8	10/24/13 1100	SO	1	x	x	x	x				
STS-PH-2013-FID10	10/23/13 1515	SO	1	x	x	x	x				
STS-PH-2013-FID15	10/23/13 1050	SO	1	x	x	x	x				
STS-PH-2013-FID16	10/23/13 1110	SO	1	x	x	x	x				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]				
STS-PH-2013-FID18	10/24/13 1535	SO	1	x	x	x	x				
STS-PH-2013-FID22	10/25/13 1500	SO	1	x	x	x	x				
STS-PH-2013-FID28	10/22/13 0930	SO	1	x	x	x	x				
STS-PH-2013-FID37	10/24/13 1700	SO	1	x	x	x	x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Total Copper - 6010B
Please include sulfur forms for ABA

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Matth Ba	10/25/13 1940		
		10-30-13 10:02	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

L15301 Chain of Custody

①

C15301

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
STS-PH-2013-FID101	10/24/13 1435	SO	1	x	x	x	x				
STS-PH-2013-FID102	10/24/13 1300	SO	1	x	x	x	x				
STS-PH-2013-FID105	10/23/13 1800	SO	1	x	x	x	x				
STS-PH-2013-FID106	10/25/13 1340	SO	1	x	x	x	x				
STS-PH-2013-REFPLOT1	10/24/13 1430	SO	1	x	x	x	x				
STS-PH-2013-REFPLOT2	10/25/13 1550	SO	1	x	x	x	x				
STS-PH-2013-REFPLOT3	10/24/13 1920	SO	1	x	x	x	x				
STS-PH-2013-REFPLOT4	10/25/13 1300	SO	1	x	x	x	x				
STS-PH-2013-ERA02	10/24/13 1000	SO	1	x	x	x	x				
STS-PH-2013-ERA03	10/23/13 1700	SO	1	x	x	x	x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Total Copper - 6010B
Please include sulfur forms for ABA

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
		LPC 10-30-13 10:02	

②

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 20, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L15302

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15302. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15302. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 20, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-ERA04

ACZ Sample ID: ***L15302-01***
Date Sampled: *10/24/13 16:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	215		*	mg/Kg	1	5	11/11/13 14:41	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/19/13 13:22	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		5			t CaCO3/Kt	1	5	11/19/13 13:22	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		5			t CaCO3/Kt	1	5	11/19/13 13:22	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.5		*	%	0.1	0.5	11/13/13 9:45	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6.4			units	0.1	0.1	11/15/13 0:00	cra
pH measured at		1	22			C	0.1	0.1	11/15/13 0:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	1	97.3		*	%	0.1	0.5	11/13/13 2:22	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.04	B	*	%	0.01	0.1	11/11/13 0:00	mss2
Sulfur HNO3 Residue		1	0.02	B	*	%	0.01	0.1	11/11/13 0:00	mss2
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	11/11/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	11/11/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/11/13 0:00	mss2
Sulfur Total		1		U	*	%	0.01	0.1	11/11/13 0:00	mss2
Total Sulfur minus Sulfate		1		U	*	%	0.01	0.1	11/11/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:30	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/06/13 12:50	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 20:21	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/06/13 12:45	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/06/13 12:45	spl

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-ERA10

ACZ Sample ID: ***L15302-02***
Date Sampled: *10/25/13 12:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	102	232		*	mg/Kg	1	5	11/11/13 14:50	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		1	B		t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		3			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		2			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.3	B	*	%	0.1	0.5	11/13/13 11:39	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5.2			units	0.1	0.1	11/15/13 0:00	cra
pH measured at		1	21.4			C	0.1	0.1	11/15/13 0:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	1	93.9		*	%	0.1	0.5	11/13/13 17:07	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.06	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur HNO3 Residue		1	0.01	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Organic Residual		1	0.01	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.05	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Total		1	0.04	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.04	B	*	%	0.01	0.1	11/12/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:36	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/06/13 13:03	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 3:42	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/06/13 13:00	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/06/13 13:00	spl

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2013-ERA13

ACZ Sample ID: ***L15302-03***
Date Sampled: *10/22/13 14:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	91		*	mg/Kg	1	5	11/11/13 14:56	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		6			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		6			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.6		*	%	0.1	0.5	11/13/13 12:36	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5.6			units	0.1	0.1	11/15/13 0:00	cra
pH measured at		1	21.9			C	0.1	0.1	11/15/13 0:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	1	93.7		*	%	0.1	0.5	11/14/13 0:30	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.03	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur HNO3 Residue		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Organic Residual		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.03	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Total		1	0.02	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.02	B	*	%	0.01	0.1	11/12/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:42	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/06/13 13:17	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 8:36	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/06/13 13:15	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/06/13 13:15	spl

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP PH 1

ACZ Sample ID: ***L15302-04***
Date Sampled: *10/24/13 00:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	365		*	mg/Kg	1	5	11/11/13 14:59	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		3			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		3			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.3	B	*	%	0.1	0.5	11/13/13 13:33	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	5.2			units	0.1	0.1	11/15/13 0:00	cra
pH measured at		1	21.5			C	0.1	0.1	11/15/13 0:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	11/14/13 7:52	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.02	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur HNO3 Residue		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Organic Residual		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Total		1	0.01	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.01	B	*	%	0.01	0.1	11/12/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:49	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/06/13 13:31	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 11:03	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/06/13 13:30	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/06/13 13:30	spl

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15302-05***
Sample ID:	DUP PH 2	Date Sampled:	*10/24/13 00:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	101	230		*	mg/Kg	1	5	11/11/13 15:09	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		6			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		81			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		75			t CaCO3/Kt	1	5	11/19/13 13:23	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	8.1		*	%	0.1	0.5	11/13/13 12:27	cdb
pH, Corrosivity	M9045D/M9040C									
pH		1	6.8			units	0.1	0.1	11/15/13 0:00	cra
pH measured at		1	21.4			C	0.1	0.1	11/15/13 0:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	1	97.1		*	%	0.1	0.5	11/14/13 15:15	spl
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.22		*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur HNO3 Residue		1	0.03	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Organic Residual		1	0.03	B	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Pyritic Sulfide		1	0.19		*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Sulfate		1		U	*	%	0.01	0.1	11/12/13 0:00	mss2
Sulfur Total		1	0.19		*	%	0.01	0.1	11/12/13 0:00	mss2
Total Sulfur minus Sulfate		1	0.19		*	%	0.01	0.1	11/12/13 0:00	mss2

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:55	spl
Crush and Pulverize	EPA-600/2-78-054 3.1.3								11/06/13 13:45	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 13:30	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								11/06/13 13:45	spl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								11/06/13 13:45	spl

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper, total (3050) — M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354640													
WG354640ICV	ICV	11/11/13 14:17	II130820-1	2		1.951	mg/L	97.6	90	110			
WG354640ICB	ICB	11/11/13 14:20				U	mg/L		-0.03	0.03			
WG354486PBS	PBS	11/11/13 14:32				U	mg/Kg		-3	3			
WG354486LCSS	LCSS	11/11/13 14:35	PCN42472	162		149.9	mg/Kg		135	190			
WG354486LCSSD	LCSSD	11/11/13 14:38	PCN42472	162		158.1	mg/Kg		135	190	5.3	20	
L15302-01MS	MS	11/11/13 14:44	II131029-2	50.5	215	261.2	mg/Kg	91.5	75	125			
L15302-01MSD	MSD	11/11/13 14:47	II131029-2	50.5	215	292.6	mg/Kg	153.7	75	125	11.34	20	M3

Neutralization Potential as CaCO3 — M600/2-78-054 3.2.3 - Modified (No Heat)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354638													
WG354638PBS	PBS	11/12/13 14:47				U	%		-0.1	0.1			
WG354638LCSS	LCSS	11/12/13 15:44	PCN33453	100		100	%	100	80	120			
L15301-01DUP	DUP	11/12/13 17:38			.1	.15	%				40	20	RA
WG354635													
WG354635PBS	PBS	11/12/13 21:10				U	%		-0.1	0.1			
WG354635LCSS	LCSS	11/12/13 23:43	PCN33453	100		102.5	%	102.5	80	120			
L15301-08DUP	DUP	11/13/13 4:49			9	9	%				0	20	

Ph — M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354951													
WG354951ICV	ICV	11/15/13 13:10	PCN42578	4		3.97	units	99.3	97	103			
L15302-01DUP	DUP	11/15/13 13:37			6.4	6.54	units				2.2	20	

Solids, Percent — CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354758													
WG354758PBS	PBS	11/12/13 19:00				U	%		99.9	100.1			
L15302-01DUP	DUP	11/13/13 9:45			97.3	97.39	%				0.1	20	

Sulfur Organic Residual — M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354653													
L15302-01DUP	DUP	11/11/13 23:45			.02	.02	%				0	20	RA

Sulfur Pyritic Sulfide — M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354653													
L15302-01DUP	DUP	11/11/13 23:45			.02	.03	%				40	20	RA

Sulfur Sulfate — M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354653													
L15302-01DUP	DUP	11/11/13 23:45			U	U	%				0	20	RA

Sulfur Total M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354653													
WG354653LCSS	LCSS	11/11/13 15:55	PCN42350	4.07		4.43	%	108.8					
L15302-01DUP	DUP	11/11/13 23:45			U	U	%				0	20	RA

Total Sulfur Minus Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354653													
L15302-01DUP	DUP	11/11/13 23:45			U	U	%				0	20	RA

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15302***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15302-01	WG354640	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354653	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15302-02	WG354640	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354653	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15302-03	WG354640	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354653	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15302-04	WG354640	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354638	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354653	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L15302-05	WG354640	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354653	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)
Solids, Percent	CLPSOW390, PART F, D-98
Sulfur HCl Residue	M600/2-78-054 3.2.4-MOD
Sulfur HNO3 Residue	M600/2-78-054 3.2.4-MOD
Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD
Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD
Sulfur Sulfate	M600/2-78-054 3.2.4-MOD
Sulfur Total	M600/2-78-054 3.2.4-MOD
Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15302
Date Received: 10/30/2013 10:04
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

```
A change was made in the ID Lines 4-6 section prior to ACZ
custody.
```

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
4057           10.8           13               Yes
NA18647        10.6           15               N/A
```

Was ice present in the shipment container(s)?

```
No - Wet or gel ice was not present in the shipment container(s).
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15302

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
STS-PH-2013-ERA04	10/24/13 1630	SO	1	x	x	x	x				
STS-PH-2013-ERA10	10/25/13 1230	SO	1	x	x	x	x				
STS-PH-2013-ERA13	10/22/13 1400	SO	1	x	x	x	x				
[redacted] DupPH1	———	SO	1	x	x	x	x				
[redacted] DupPH2	———	SO	1	x	x	x	x				
[redacted]		[redacted]				[redacted]					
Rinsate PH		SW	1			x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Total Copper - 6010B
Please include sulfur forms for ABA

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Matth Bark	10/25/13 1940		
		RPL 10-30-13 10:02	

L15302 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 13, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15303

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15303. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15303. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 13, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15303-01***
Sample ID:	RINSATE PH	Date Sampled:	*10/25/13 19:40*
		Date Received:	*10/30/13*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS				*				11/08/13 10:17	las

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	1	0.0014	B		mg/L	0.0005	0.003	11/11/13 23:06	pmc

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper, total   M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354607													
WG354607ICV	ICV	11/11/13 22:43	MS131018-2	.05		.05136	mg/L	102.7	90	110			
WG354607ICB	ICB	11/11/13 22:47				U	mg/L		-0.0015	0.0015			
WG354531LRB	LRB	11/11/13 22:50				U	mg/L		-0.0011	0.0011			
WG354531LFB	LFB	11/11/13 22:53	MS130927-2	.05005		.05297	mg/L	105.8	85	115			
L15315-01LFM	LFM	11/11/13 23:12	MS130927-2	.05005	.0065	.06062	mg/L	108.1	70	130			
L15315-01LFMD	LFMD	11/11/13 23:15	MS130927-2	.05005	.0065	.05857	mg/L	104	70	130	3.44	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15303***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15303-01	WG354531	Total Hot Plate Digestion	M200.2 ICP-MS	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15303***

No certification qualifiers associated with this analysis

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15303
Date Received: 10/30/2013 10:02
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?		X	
`The date/time was not present on the sample containers or on the COC. The "Relinquished By" date was used to enter the samples.`			
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		
`A change was made in the ID Lines 4-6 section prior to ACZ custody.`			

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
4057	10.8	13	Yes

Was ice present in the shipment container(s)?

`No - Wet or gel ice was not present in the shipment container(s).`

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15303
Date Received:	10/30/2013 10:02
Received By:	mtb
Date Printed:	10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

L15303

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson

Company: Chino Mines Company

E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023

Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley

Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com

Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson

Company: Chino Mines Company

E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023

Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

ANALYSES REQUESTED ***(attach list or use quote number)***

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Patrick Quinn

Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
STS-PH-2013-ERA04	10/24/13 1630	SO	1	x	x	x	x				
STS-PH-2013-ERA10	10/25/13 1230	SO	1	x	x	x	x				
STS-PH-2013-ERA13	10/22/13 1400	SO	1	x	x	x	x				
[redacted] DupPH1	—	SO	1	x	x	x	x				
[redacted] DupPH2	—	SO	1	x	x	x	x				
[redacted]		[redacted]				[redacted]					
Rinsate PH		SW	1			X					

COPY

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Total Copper - 6010B
Please include sulfur forms for ABA

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/25/13 1940		
		10-30-13 10:02	

L15303 Chain of Custody

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 21, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15304

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15304. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15304. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 21, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15304-01***
Sample ID:	STS-AMD-2013F-W1 0-6	Date Sampled:	*10/24/13 12:55*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:50	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 10:29	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	20100		*	mg/Kg	20	100	11/11/13 9:43	jjc
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/11/13 19:16	jjc
Copper, total (3050)	M6010B ICP	101	1450		*	mg/Kg	1	5	11/11/13 9:43	jjc
Potassium, total (3050)	M6010B ICP	101	3140			mg/Kg	30	200	11/11/13 9:43	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	11/11/13 13:51	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	11/11/13 13:51	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/12/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/12/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.0		*	%	0.1	0.5	11/08/13 17:44	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:20	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 15:56	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:15	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 14:15	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 11:42	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.12			mg/Kg	0.02	0.1	11/20/13 16:17	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.16		*	mg/Kg	0.02	0.1	11/12/13 21:43	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.04	B	*	mg/Kg	0.01	0.05	11/12/13 21:43	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	0.6	B	*	mg/Kg	0.5	5	11/13/13 15:30	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	170	0.098		*	%	0.002	0.009	11/12/13 13:30	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W2 0-6

ACZ Sample ID: ***L15304-02***
Date Sampled: *10/24/13 12:42*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:50	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 10:53	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	11500		*	mg/Kg	20	100	11/11/13 9:53	jjc
Copper (1312)	M6010B ICP	1	0.07		*	mg/L	0.01	0.05	11/11/13 19:22	jjc
Copper, total (3050)	M6010B ICP	102	1650		*	mg/Kg	1	5	11/11/13 9:53	jjc
Potassium, total (3050)	M6010B ICP	102	2750			mg/Kg	30	200	11/11/13 9:53	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	11/11/13 17:42	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 17:42	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/12/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/12/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.8		*	%	0.1	0.5	11/08/13 20:58	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:22	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 18:52	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:06	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:24	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 15:46	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 12:06	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.30			mg/Kg	0.02	0.1	11/20/13 16:18	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.34		*	mg/Kg	0.02	0.1	11/12/13 21:46	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.04	B	*	mg/Kg	0.01	0.05	11/12/13 21:46	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	11/13/13 15:32	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	120	0.101		*	%	0.001	0.006	11/12/13 13:32	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15304-03***
Sample ID:	STS-AMD-2013F-W3 0-6	Date Sampled:	*10/24/13 13:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:50	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 11:29	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	8040		*	mg/Kg	20	100	11/11/13 9:59	jjc
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/11/13 19:31	jjc
Copper, total (3050)	M6010B ICP	102	793		*	mg/Kg	1	5	11/11/13 9:59	jjc
Potassium, total (3050)	M6010B ICP	102	3540			mg/Kg	30	200	11/11/13 9:59	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	11/11/13 19:38	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 19:38	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.9		*	%	0.1	0.5	11/09/13 0:12	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:24	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 20:50	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:09	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:33	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 18:04	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 12:18	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.14			mg/Kg	0.02	0.1	11/20/13 16:18	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.20		*	mg/Kg	0.02	0.1	11/12/13 21:47	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.06		*	mg/Kg	0.01	0.05	11/12/13 21:47	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	1	B	*	mg/Kg	1	10	11/13/13 15:33	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.137		*	%	0.002	0.01	11/12/13 13:34	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W1 18-24"

ACZ Sample ID: ***L15304-04***
Date Sampled: *10/24/13 13:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:50	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 11:42	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	202	123000		*	mg/Kg	40	200	11/11/13 13:37	jjc
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	11/11/13 19:37	jjc
Copper, total (3050)	M6010B ICP	101	99		*	mg/Kg	1	5	11/11/13 10:02	jjc
Potassium, total (3050)	M6010B ICP	101	1990			mg/Kg	30	200	11/11/13 10:02	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	4.1		*	%	0.1	0.5	11/11/13 21:34	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	11/11/13 21:34	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.6		*	%	0.1	0.5	11/09/13 3:27	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:26	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 21:49	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:12	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:43	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 18:50	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 12:31	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.30			mg/Kg	0.02	0.1	11/20/13 16:18	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.32		*	mg/Kg	0.02	0.1	11/12/13 21:49	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 21:49	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.3	B	*	mg/Kg	0.3	3	11/13/13 15:34	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.067		*	%	0.002	0.01	11/12/13 13:35	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15304-05***
Sample ID:	STS-AMD-2013F-W2 18-24"	Date Sampled:	*10/24/13 13:30*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 11:54	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	62300		*	mg/Kg	20	100	11/11/13 10:11	jjc
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/11/13 19:47	jjc
Copper, total (3050)	M6010B ICP	101	435		*	mg/Kg	1	5	11/11/13 10:11	jjc
Potassium, total (3050)	M6010B ICP	101	3530			mg/Kg	30	200	11/11/13 10:11	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	3.4		*	%	0.1	0.5	11/11/13 23:30	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/11/13 23:30	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.8		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.4		*	%	0.1	0.5	11/09/13 6:41	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:28	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 22:48	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:15	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:52	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 19:36	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 12:43	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.90			mg/Kg	0.02	0.1	11/20/13 16:18	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.94		*	mg/Kg	0.02	0.1	11/12/13 21:50	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.04	B	*	mg/Kg	0.01	0.05	11/12/13 21:50	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	1	B	*	mg/Kg	1	10	11/13/13 15:35	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	150	0.114		*	%	0.002	0.008	11/12/13 13:36	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15304-06***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 13:40*
Sample ID:	STS-AMD-2013F-W3 6-12"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 12:06	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	49900		*	mg/Kg	20	100	11/11/13 10:14	jjc
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	11/11/13 19:50	jjc
Copper, total (3050)	M6010B ICP	102	285		*	mg/Kg	1	5	11/11/13 10:14	jjc
Potassium, total (3050)	M6010B ICP	102	3680			mg/Kg	30	200	11/11/13 10:14	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	3.3		*	%	0.1	0.5	11/12/13 1:25	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	11/12/13 1:25	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.8		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	87.2		*	%	0.1	0.5	11/09/13 9:55	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:30	spl
Digestion - Hot Plate	M3050B ICP								11/07/13 23:46	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:18	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:02	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 20:22	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 12:55	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.25			mg/Kg	0.02	0.1	11/20/13 16:18	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.30		*	mg/Kg	0.02	0.1	11/12/13 21:51	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.05		*	mg/Kg	0.01	0.05	11/12/13 21:51	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	11/13/13 15:36	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	210	0.147		*	%	0.002	0.01	11/12/13 13:38	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15304-07***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 13:05*
Sample ID:	STS-AMD-2013F-W4 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 12:18	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07		*	mg/L	0.01	0.05	11/11/13 19:53	jjc
Copper, total (3050)	M6010B ICP	101	2220		*	mg/Kg	1	5	11/11/13 10:17	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.5		*	%	0.1	0.5	11/09/13 13:09	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:32	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 0:45	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:21	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:11	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 21:08	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15304-08***
Sample ID:	STS-AMD-2013F-W5 0-6	Date Sampled:	*10/24/13 12:58*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 12:30	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.06		*	mg/L	0.01	0.05	11/11/13 19:56	jjc
Copper, total (3050)	M6010B ICP	101	2800		*	mg/Kg	1	5	11/11/13 10:20	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.8		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.7		*	%	0.1	0.5	11/09/13 16:24	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:34	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 1:44	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:24	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:21	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 21:54	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W6 0-6

ACZ Sample ID: ***L15304-09***
Date Sampled: *10/24/13 12:40*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 12:42	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B	*	mg/L	0.01	0.05	11/11/13 19:59	jjc
Copper, total (3050)	M6010B ICP	101	1180		*	mg/Kg	1	5	11/11/13 11:07	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.9		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.3		*	%	0.1	0.5	11/09/13 19:38	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:36	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 2:43	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:27	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:30	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 22:40	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15304-10***
Sample ID:	STS-AMD-2013F-W7 0-6	Date Sampled:	*10/24/13 12:50*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 12:54	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05		*	mg/L	0.01	0.05	11/11/13 20:02	jjc
Copper, total (3050)	M6010B ICP	101	2320		*	mg/Kg	1	5	11/11/13 10:27	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	97.4		*	%	0.1	0.5	11/09/13 22:52	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:38	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 3:42	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:30	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:40	spl
Synthetic Precip. Leaching Procedure	M1312								11/05/13 23:26	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W8 0-6

ACZ Sample ID: ***L15304-11***
Date Sampled: *10/24/13 13:12*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 13:07	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09		*	mg/L	0.01	0.05	11/11/13 20:05	jjc
Copper, total (3050)	M6010B ICP	102	1720		*	mg/Kg	1	5	11/11/13 10:30	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.2		*	%	0.1	0.5	11/10/13 2:07	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:41	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 4:40	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:33	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:49	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 0:12	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E1 0-6

ACZ Sample ID: ***L15304-12***
Date Sampled: *10/25/13 09:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 13:19	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	10900		*	mg/Kg	20	100	11/11/13 10:33	jjc
Copper (1312)	M6010B ICP	1	0.24		*	mg/L	0.01	0.05	11/11/13 20:08	jjc
Copper, total (3050)	M6010B ICP	101	743		*	mg/Kg	1	5	11/11/13 10:33	jjc
Potassium, total (3050)	M6010B ICP	101	4870			mg/Kg	30	200	11/11/13 10:33	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	5.1		*	%	0.1	0.5	11/12/13 3:21	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.7		*	%	0.1	0.5	11/12/13 3:21	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.0		*	%	0.1	0.5	11/10/13 5:21	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:43	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 5:39	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:36	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:59	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 0:58	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 13:07	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.46			mg/Kg	0.02	0.1	11/20/13 16:19	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	3.82		*	mg/Kg	0.02	0.1	11/12/13 21:54	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.36		*	mg/Kg	0.01	0.05	11/12/13 21:54	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 15:37	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.365		*	%	0.002	0.01	11/12/13 13:41	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E2 0-6

ACZ Sample ID: ***L15304-13***
Date Sampled: *10/25/13 09:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 13:31	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	3380		*	mg/Kg	20	100	11/11/13 10:36	jjc
Copper (1312)	M6010B ICP	1	0.23		*	mg/L	0.01	0.05	11/11/13 20:11	jjc
Copper, total (3050)	M6010B ICP	101	865		*	mg/Kg	1	5	11/11/13 10:36	jjc
Potassium, total (3050)	M6010B ICP	101	3860			mg/Kg	30	200	11/11/13 10:36	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/12/13 5:17	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 5:17	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	6.3		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.5		*	%	0.1	0.5	11/10/13 8:35	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:45	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 6:38	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:39	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:08	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 1:44	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 13:19	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.18			mg/Kg	0.02	0.1	11/20/13 16:19	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	1.20		*	mg/Kg	0.02	0.1	11/12/13 21:56	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 21:56	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	11/13/13 15:41	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	180	0.115		*	%	0.002	0.009	11/12/13 13:42	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E3 0-6

ACZ Sample ID: ***L15304-14***
Date Sampled: *10/25/13 09:45*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 13:43	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	4000		*	mg/Kg	20	100	11/11/13 10:39	jjc
Copper (1312)	M6010B ICP	1	0.10		*	mg/L	0.01	0.05	11/11/13 20:14	jjc
Copper, total (3050)	M6010B ICP	101	1020		*	mg/Kg	1	5	11/11/13 10:39	jjc
Potassium, total (3050)	M6010B ICP	101	4240			mg/Kg	30	200	11/11/13 10:39	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/12/13 7:12	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 7:12	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	5.6		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.0		*	%	0.1	0.5	11/10/13 11:49	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:47	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 7:37	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:42	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:18	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 2:30	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 13:32	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		6.85			mg/Kg	0.08	0.4	11/20/13 16:19	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	4	6.87		*	mg/Kg	0.08	0.4	11/12/13 22:25	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 21:57	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	11/13/13 15:42	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.124		*	%	0.002	0.01	11/12/13 13:43	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E1 15-21

ACZ Sample ID: ***L15304-15***
Date Sampled: *10/25/13 10:42*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 13:55	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	204	99000		*	mg/Kg	40	200	11/11/13 13:43	jjc
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/11/13 20:24	jjc
Copper, total (3050)	M6010B ICP	102	106		*	mg/Kg	1	5	11/11/13 10:48	jjc
Potassium, total (3050)	M6010B ICP	102	6370			mg/Kg	30	200	11/11/13 10:48	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	3.3		*	%	0.1	0.5	11/12/13 9:08	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	11/12/13 9:08	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.4		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	83.1		*	%	0.1	0.5	11/10/13 15:04	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:49	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 8:36	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:45	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:27	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 3:16	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 13:44	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		9.3			mg/Kg	0.1	0.5	11/20/13 16:19	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	9.3		*	mg/Kg	0.1	0.5	11/12/13 22:27	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.04	B	*	mg/Kg	0.01	0.05	11/12/13 21:58	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.4	B	*	mg/Kg	0.3	3	11/13/13 16:09	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	170	0.066		*	%	0.002	0.009	11/12/13 13:44	tcd

Arizona license number: AZ0102

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E2 18-24

ACZ Sample ID: ***L15304-16***
Date Sampled: *10/25/13 10:33*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:51	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 14:07	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	202	101000		*	mg/Kg	40	200	11/11/13 13:46	jjc
Copper (1312)	M6010B ICP	1	0.01	B	*	mg/L	0.01	0.05	11/11/13 20:27	jjc
Copper, total (3050)	M6010B ICP	101	161		*	mg/Kg	1	5	11/11/13 10:51	jjc
Potassium, total (3050)	M6010B ICP	101	4860			mg/Kg	30	200	11/11/13 10:51	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	3.4		*	%	0.1	0.5	11/12/13 11:04	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	11/12/13 11:04	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	84.7		*	%	0.1	0.5	11/10/13 18:18	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:51	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 9:34	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:48	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:37	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 4:02	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 13:56	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.93			mg/Kg	0.02	0.1	11/20/13 16:19	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	2.95		*	mg/Kg	0.02	0.1	11/12/13 21:59	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 21:59	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	11/13/13 15:45	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.060		*	%	0.002	0.01	11/12/13 13:45	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E3 10-16

ACZ Sample ID: ***L15304-17***
Date Sampled: *10/25/13 10:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/11/13 14:19	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	5600		*	mg/Kg	20	100	11/11/13 10:55	jjc
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/11/13 20:30	jjc
Copper, total (3050)	M6010B ICP	102	566		*	mg/Kg	1	5	11/11/13 10:55	jjc
Potassium, total (3050)	M6010B ICP	102	4860			mg/Kg	30	200	11/11/13 10:55	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/12/13 13:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	11/12/13 13:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	6.7		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	85.1		*	%	0.1	0.5	11/10/13 21:32	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:53	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 10:33	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:51	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:46	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 4:48	cra
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 14:08	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.82			mg/Kg	0.02	0.1	11/20/13 16:19	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	3.83		*	mg/Kg	0.02	0.1	11/12/13 22:00	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.01	B	*	mg/Kg	0.01	0.05	11/12/13 22:00	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.7	B	*	mg/Kg	0.3	3	11/13/13 15:46	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	240	0.087		*	%	0.002	0.01	11/12/13 13:46	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15304-18***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 09:55*
Sample ID:	STS-AMD-2013F-E4 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 14:31	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.16		*	mg/L	0.01	0.05	11/11/13 20:33	jjc
Copper, total (3050)	M6010B ICP	102	699		*	mg/Kg	1	5	11/11/13 10:58	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.4		*	%	0.1	0.5	11/11/13 0:47	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:55	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 11:32	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:54	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:55	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 5:34	cra

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15304-19***
Sample ID:	STS-AMD-2013F-E5 0-6	Date Sampled:	*10/25/13 09:50*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 14:44	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.21		*	mg/L	0.01	0.05	11/11/13 20:36	jjc
Copper, total (3050)	M6010B ICP	101	851		*	mg/Kg	1	5	11/11/13 11:01	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.5		*	%	0.1	0.5	11/11/13 4:01	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:57	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 12:31	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 20:57	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 17:05	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 6:20	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E6 0-6

ACZ Sample ID: ***L15304-20***
Date Sampled: *10/25/13 09:52*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 14:56	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.11		*	mg/L	0.01	0.05	11/11/13 20:39	jjc
Copper, total (3050)	M6010B ICP	103	605		*	mg/Kg	1	5	11/11/13 11:04	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/13/13 0:00	spl
pH		1	6.7		*	units	0.1	0.1	11/13/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	89.8		*	%	0.1	0.5	11/11/13 7:15	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 12:59	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 13:30	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/12/13 21:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 17:14	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 7:06	cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354618													
WG354618ICV	ICV	11/11/13 9:19	II130820-1	100		99.99	mg/L	100	90	110			
WG354618ICB	ICB	11/11/13 9:22				U	mg/L		-0.6	0.6			
WG354483PBS	PBS	11/11/13 9:34				U	mg/Kg		-60	60			
WG354483LCSS	LCSS	11/11/13 9:37	PCN42472	7890		7714	mg/Kg		6500	9290			
WG354483LCSSD	LCSSD	11/11/13 9:40	PCN42472	7890		7945	mg/Kg		6500	9290	3	20	
L15304-01MS	MS	11/11/13 9:46	II131029-2	6868.22725	20100	25058	mg/Kg	72.2	75	125			M2
L15304-01MSD	MSD	11/11/13 9:50	II131029-2	6868.22725	20100	25210	mg/Kg	74.4	75	125	0.6	20	M2
WG354650													
WG354650ICV	ICV	11/11/13 13:03	II130820-1	100		98.16	mg/L	98.2	90	110			
WG354650ICB	ICB	11/11/13 13:06				U	mg/L		-0.6	0.6			
WG354483PBS	PBS	11/11/13 13:18				U	mg/Kg		-60	60			
WG354483LCSS	LCSS	11/11/13 13:21	PCN42472	7890		7651	mg/Kg		6500	9290			
WG354483LCSSD	LCSSD	11/11/13 13:24	PCN42472	7890		7843	mg/Kg		6500	9290	2.5	20	
L15304-01MS	MS	11/11/13 13:31	II131029-2	6868.22725	19900	24785	mg/Kg	71.1	75	125			MA
L15304-01MSD	MSD	11/11/13 13:34	II131029-2	6868.22725	19900	25028	mg/Kg	74.7	75	125	0.98	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354626													
WG354626PBS	PBS	11/11/13 10:00				U	%		-0.3	0.3			
WG354626LCSS	LCSS	11/11/13 11:55	PCN42350	4.19		4.4	%		80	120			
L15304-01DUP	DUP	11/11/13 15:47			1.6	1.7	%				6.1	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354626													
WG354626PBS	PBS	11/11/13 10:00				U	%		-0.3	0.3			
L15304-01DUP	DUP	11/11/13 15:47			1.2	1.1	%				8.7	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354686													
WG354686ICV	ICV	11/11/13 18:54	II131111-1	2		1.951	mg/L	97.6	90	110			
WG354686ICB	ICB	11/11/13 18:57				U	mg/L		-0.03	0.03			
WG354502PBS	PBS	11/11/13 19:09				U	mg/L		-0.03	0.03			
WG354502LFB	LFB	11/11/13 19:13	II131029-2	.5		.522	mg/L	104.4	85	115			
L15304-01DUP	DUP	11/11/13 19:19			.03	.045	mg/L				40	20	RA
L15304-02MS	MS	11/11/13 19:25	II131029-2	.5	.07	.586	mg/L	103.2	75	125			
L15304-02MSD	MSD	11/11/13 19:28	II131029-2	.5	.07	.592	mg/L	104.4	75	125	1.02	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354618													
WG354618ICV	ICV	11/11/13 9:19	II130820-1	2		1.962	mg/L	98.1	90	110			
WG354618ICB	ICB	11/11/13 9:22				U	mg/L		-0.03	0.03			
WG354483PBS	PBS	11/11/13 9:34				U	mg/Kg		-3	3			
WG354483LCSS	LCSS	11/11/13 9:37	PCN42472	162		155.6	mg/Kg		135	190			
WG354483LCSSD	LCSSD	11/11/13 9:40	PCN42472	162		159.3	mg/Kg		135	190	2.3	20	
L15304-01MS	MS	11/11/13 9:46	II131029-2	50.5	1450	1386.7	mg/Kg	-125.3	75	125			M3
L15304-01MSD	MSD	11/11/13 9:50	II131029-2	50.5	1450	1309	mg/Kg	-279.2	75	125	5.76	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354762													
WG354762ICV	ICV	11/12/13 16:41	WI131015-1	2.416		2.358	mg/L	97.6	90	110			
WG354762ICB	ICB	11/12/13 16:42				U	mg/L		-0.06	0.06			
WG354762LFB1	LFB	11/12/13 21:40	WI130816-3	2		2.032	mg/Kg	101.6	90	110			
WG354643PBS1	PBS	11/12/13 21:41				U	mg/Kg		-0.06	0.06			
L15304-01AS	AS	11/12/13 21:44	WI130816-3	2	.16	2.286	mg/Kg	106.3	90	110			
L15304-01DUP	DUP	11/12/13 21:45			.16	.167	mg/Kg				4.3	20	RA
WG354643PBS2	PBS	11/12/13 22:14				.037	mg/Kg		-0.06	0.06			
WG354762LFB2	LFB	11/12/13 22:15	WI130816-3	2		1.996	mg/Kg	99.8	90	110			
L15306-16AS	AS	11/12/13 22:17	WI130816-3	2	1.9	3.953	mg/Kg	102.7	90	110			
L15306-19DUP	DUP	11/12/13 22:24			3.02	2.567	mg/Kg				16.2	20	

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354762													
WG354762ICV	ICV	11/12/13 16:41	WI131015-1	.609		.606	mg/L	99.5	90	110			
WG354762ICB	ICB	11/12/13 16:42				U	mg/L		-0.03	0.03			
WG354762LFB1	LFB	11/12/13 21:40	WI130816-3	1		1.028	mg/Kg	102.8	90	110			
WG354643PBS1	PBS	11/12/13 21:41				U	mg/Kg		-0.03	0.03			
L15304-01AS	AS	11/12/13 21:44	WI130816-3	1	.04	1.083	mg/Kg	104.3	90	110			
L15304-01DUP	DUP	11/12/13 21:45			.04	.046	mg/Kg				14	20	RA
WG354643PBS2	PBS	11/12/13 22:14				U	mg/Kg		-0.03	0.03			
WG354762LFB2	LFB	11/12/13 22:15	WI130816-3	1		1.025	mg/Kg	102.5	90	110			
L15306-16AS	AS	11/12/13 22:17	WI130816-3	1	.02	1.081	mg/Kg	106.1	90	110			
L15306-19DUP	DUP	11/12/13 22:24			.02	.021	mg/Kg				4.9	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354803													
WG354803ICV	ICV	11/13/13 15:23	WI131021-1	1.003		1.009	mg/L	100.6	90	110			
WG354803ICB	ICB	11/13/13 15:27				U	mg/L		-0.15	0.15			
WG354803LFB1	LFB	11/13/13 15:28	WI121218-3	1		1.035	mg/Kg	103.5	90	110			
WG354643PBS1	PBS	11/13/13 15:29				.4	mg/Kg		-0.9	0.9			
L15304-01DUP	DUP	11/13/13 15:31			.6	.97	mg/Kg				47.1	20	RA
WG354643PBS2	PBS	11/13/13 15:58				U	mg/Kg		-0.9	0.9			
WG354803LFB2	LFB	11/13/13 15:59	WI121218-3	1		1.036	mg/Kg	103.6	90	110			
L15304-15AS	AS	11/13/13 16:10	WI121218-3	5	.4	5.55	mg/Kg	103	75	125			
L15306-18AS	AS	11/13/13 17:49	WI121218-3	5	3.3	8.45	mg/Kg	103	75	125			
L15306-19DUP	DUP	11/13/13 17:51			1.1	1.77	mg/Kg				46.7	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354723													
WG354723ICV	ICV	11/12/13 13:25	WI131021-2	4		4.06	mg/L	101.5	90	110			
WG354723ICB	ICB	11/12/13 13:26				U	mg/L		-0.3	0.3			
WG354667PBS1	PBS	11/12/13 13:27				U	%		-0.006	0.006			
WG354667LFB1	LFB	11/12/13 13:29	WI130930-4	2.5		2.25	%	90	85	115			
L15304-01MS	MS	11/12/13 13:31	WI130930-4	525	.098	.1301	%	61.1	75	125			M2
L15304-02DUP	DUP	11/12/13 13:33			.101	.0985	%				2.5	20	
WG354723ICV1	ICV	11/12/13 14:41	WI131021-2	4		4.05	mg/L	101.3	90	110			
WG354723ICB1	ICB	11/12/13 14:43				U	mg/L		-0.3	0.3			
WG354667PBS2	PBS	11/12/13 14:48				U	%		-0.3	0.3			
WG354667LFB2	LFB	11/12/13 15:06	WI130930-4	2.5		2.51	%	100.4	85	115			

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354761													
WG354761ICV	ICV	11/12/13 21:53	PCN42578	4		4.05	units	101.3	97	103			
L15304-01DUP	DUP	11/12/13 23:08			7.6	7.8	units				2.6	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354618													
WG354618ICV	ICV	11/11/13 9:19	II130820-1	20		20.13	mg/L	100.7	90	110			
WG354618ICB	ICB	11/11/13 9:22				U	mg/L		-0.9	0.9			
WG354483PBS	PBS	11/11/13 9:34				U	mg/Kg		-90	90			
WG354483LCSS	LCSS	11/11/13 9:37	PCN42472	2600		2677	mg/Kg		1720	3470			
WG354483LCSSD	LCSSD	11/11/13 9:40	PCN42472	2600		2726	mg/Kg		1720	3470	1.8	20	
L15304-01MS	MS	11/11/13 9:46	II131029-2	10094.48439	3140	13958	mg/Kg	107.2	75	125			
L15304-01MSD	MSD	11/11/13 9:50	II131029-2	10094.48439	3140	14049	mg/Kg	108.1	75	125	0.65	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354581													
WG354581PBS	PBS	11/08/13 14:30				U	%		99.9	100.1			
L15304-20DUP	DUP	11/11/13 10:29			89.8	89.35	%				0.5	20	

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15304***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-01	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-02	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-03	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-04	WG354650	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15304***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-05	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-06	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L15304-07	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15304-08	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15304-09	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-10	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15304-11	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15304-12	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-13	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15304***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-14	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-15	WG354650	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-16	WG354650	Calcium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15304***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15304-17	WG354618	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354626	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L15304-18	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15304-19	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15304-20	WG354686	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354618	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Certification Qualifiers

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15304
Date Received: 10/30/2013 10:18
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id     Temp (°C)     Rad (µR/Hr)     Custody Seal Intact?
---------     ---------     -----------     --------------------
2311          12.2          13              Yes
3041          13            14              Yes
3226          10.4          13              Yes
3834          11.1          13              Yes
3944          12.3          13              Yes
3991          12            15              Yes
```

Was ice present in the shipment container(s)?

```
No - Wet or gel ice was not present in the shipment container(s).
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15304
Date Received:	10/30/2013 10:18
Received By:	mtb
Date Printed:	10/30/2013

ACZ Laboratories, Inc. L15304

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L15304 Chain of Custody

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION | **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Patrick Quinn

Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-W1 0-6	10/24/2013 1255	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-W2 0-6	10/24/2013 1242	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-W3 0-6	10/24/2013 1300	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-W1 18-24"	10/24/2013 1335	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-W2 18-24"	10/24/2013 1330	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-W3 6-12"	10/24/2013 1340	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-W4 0-6	10/24/2013 1305	SO	1	X	X	X					
STS-AMD-2013F-W5 0-6	10/24/2013 1258	SO	1	X	X	X					
STS-AMD-2013F-W6 0-6	10/24/2013 1240	SO	1	X	X	X					
STS-AMD-2013F-W7 0-6	10/24/2013 1250	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 3:00pm		
		LPC 10-30-13 10:05	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

1

ACZ Laboratories, Inc. L15304

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Patrick Quinn

Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-W8 0-6	10/24/2013 1312	SO	1	x	x	x					
STS-AMD-2013F-E1 0-6	10/25/2013 0935	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E2 0-6	10/25/2013 0930	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E3 0-6	10/25/2013 0945	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E1 15-21	10/25/2013 1042	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E2 18-24	10/25/2013 1033	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E3 10-16	10/25/2013 1035	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E4 0-6	10/25/2013 0955	SO	1	x	x	x					
STS-AMD-2013F-E5 0-6	10/25/2013 0950	SO	1	x	x	x					
STS-AMD-2013F-E6 0-6	10/25/2013 0952	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 3:00pm		
		NRC 10.30.13 10:05	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

②

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 22, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15305

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15305. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15305. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 22, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

November 22, 2013

Project ID: ZN000001M5
ACZ Project ID: L15305

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 20 soil samples from Freeport-McMoRan - Chino Mines Company on October 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L15305. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The following modifications have been made to the SPLP Copper analysis (N1):

1) The soil to solution ratio was reduced to better simulate soils wetted by rainfall. A ratio of 1:5 soil:solution should be used for chemical analysis.

2) A 0.01 M $CaCl_2$ lixiviant was used instead of deionized water to better simulate the ionic strength of soil solutions (after Sauve et al. 1995); and

3) No adjustment to the initial pH of the soil solution to 5, as is commonly done in the Standard Method 1312 implementation. This step is taken to help ensure that the pH of the soil solution is due to the elements of the solution, not an outside source of acid.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-01***
Sample ID:	STS-AMD-2013F-W1 0-6	Date Sampled:	*10/24/13 12:55*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 14:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/14/13 10:22	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/07/13 16:45	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W2 0-6

ACZ Sample ID: ***L15305-02***
Date Sampled: *10/24/13 12:42*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 14:47	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05		*	mg/L	0.01	0.05	11/14/13 10:28	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 1:45	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5

Sample ID: STS-AMD-2013F-W3 0-6

ACZ Sample ID: ***L15305-03***

Date Sampled: *10/24/13 13:00*

Date Received: *10/30/13*

Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 15:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.01	B	*	mg/L	0.01	0.05	11/14/13 10:38	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 15:17	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-W1 18-24"

ACZ Sample ID:	***L15305-04***
Date Sampled:	*10/24/13 13:35*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 15:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	11/14/13 10:41	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 19:47	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15305-05***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 13:30*
Sample ID:	STS-AMD-2013F-W2 18-24"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 15:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	11/14/13 10:44	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/09/13 0:18	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15305-06***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 13:40*
Sample ID:	STS-AMD-2013F-W3 6-12"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 15:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1		U	*	mg/L	0.01	0.05	11/14/13 10:53	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/09/13 4:48	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-07***
Sample ID:	STS-AMD-2013F-W4 0-6	Date Sampled:	*10/24/13 13:05*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 16:10	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/14/13 10:56	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/09/13 9:19	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-08***
Sample ID:	STS-AMD-2013F-W5 0-6	Date Sampled:	*10/24/13 12:58*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 16:22	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/14/13 11:00	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/09/13 13:49	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-W6 0-6
ACZ Sample ID:	***L15305-09***
Date Sampled:	*10/24/13 12:40*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 16:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/14/13 11:03	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/09/13 18:20	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W7 0-6

ACZ Sample ID: ***L15305-10***
Date Sampled: *10/24/13 12:50*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 16:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B	*	mg/L	0.01	0.05	11/14/13 11:06	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/09/13 22:50	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-W8 0-6

ACZ Sample ID: ***L15305-11***
Date Sampled: *10/24/13 13:12*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 16:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/14/13 11:12	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/10/13 3:21	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-12***
Sample ID:	STS-AMD-2013F-E1 0-6	Date Sampled:	*10/25/13 09:35*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 17:09	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.18		*	mg/L	0.01	0.05	11/14/13 11:15	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/10/13 7:51	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-13***
Sample ID:	STS-AMD-2013F-E2 0-6	Date Sampled:	*10/25/13 09:30*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 17:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.28		*	mg/L	0.01	0.05	11/14/13 11:18	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/10/13 12:22	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15305-14***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 09:45*
Sample ID:	STS-AMD-2013F-E3 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 17:33	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.26		*	mg/L	0.01	0.05	11/14/13 11:22	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/10/13 16:52	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-15***
Sample ID:	STS-AMD-2013F-E1 15-21	Date Sampled:	*10/25/13 10:42*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 17:45	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/14/13 11:31	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/10/13 21:23	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E2 18-24

ACZ Sample ID: ***L15305-16***
Date Sampled: *10/25/13 10:33*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 17:57	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.08		*	mg/L	0.01	0.05	11/14/13 11:34	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/11/13 1:53	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E3 10-16

ACZ Sample ID: ***L15305-17***
Date Sampled: *10/25/13 10:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 18:09	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/14/13 11:37	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/11/13 6:24	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E4 0-6

ACZ Sample ID: ***L15305-18***
Date Sampled: *10/25/13 09:55*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 18:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.13		*	mg/L	0.01	0.05	11/14/13 11:40	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/11/13 10:54	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-19***
Sample ID:	STS-AMD-2013F-E5 0-6	Date Sampled:	*10/25/13 09:50*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 18:32	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.16		*	mg/L	0.01	0.05	11/14/13 11:44	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/11/13 15:25	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15305-20***
Sample ID:	STS-AMD-2013F-E6 0-6	Date Sampled:	*10/25/13 09:52*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/13/13 18:44	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12		*	mg/L	0.01	0.05	11/14/13 11:47	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/11/13 19:55	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354867													
WG354867ICV	ICV	11/14/13 10:00	II131111-1	2		1.918	mg/L	95.9	90	110			
WG354867ICB	ICB	11/14/13 10:03				U	mg/L		-0.03	0.03			
WG354508PBS	PBS	11/14/13 10:16				U	mg/L		-0.03	0.03			
WG354508LFB	LFB	11/14/13 10:19	II131029-2	.5		.523	mg/L	104.6	85	115			
L15305-01DUP	DUP	11/14/13 10:25			.03	.024	mg/L				22.2	20	RA
L15305-02MS	MS	11/14/13 10:32	II131029-2	.5	.05	.575	mg/L	105	75	125			
L15305-02MSD	MSD	11/14/13 10:35	II131029-2	.5	.05	.569	mg/L	103.8	75	125	1.05	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15305-01	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-02	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-03	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-04	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-05	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-06	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-07	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-08	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15305-09	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-10	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-11	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-12	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-13	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-14	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-15	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-16	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15305***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15305-17	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-18	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-19	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15305-20	WG354867	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354508	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15305***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15305
Date Received: 10/30/2013 10:18
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id     Temp (°C)     Rad (µR/Hr)     Custody Seal Intact?
---------     ---------     -----------     --------------------
2311          12.2          13              Yes
3041          13            14              Yes
3226          10.4          13              Yes
3834          11.1          13              Yes
3944          12.3          13              Yes
3991          12            15              Yes
```

Was ice present in the shipment container(s)?

```
No - Wet or gel ice was not present in the shipment container(s).
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15305
Date Received:	10/30/2013 10:18
Received By:	mtb
Date Printed:	10/30/2013

ACZ Laboratories, Inc. L15305

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon
STS-AMD-2013F-W1 0-6	10/24/2013 1255	SO	1	x	x	x	x	x	x	x
STS-AMD-2013F-W2 0-6	10/24/2013 1242	SO	1	x	x	x	x	x	x	x
STS-AMD-2013F-W3 0-6	10/24/2013 1300	SO	1	x	x	x	x	x	x	x
STS-AMD-2013F-W1 18-24"	10/24/2013 1335	SO	1	x	x	x	x	x	x	x
STS-AMD-2013F-W2 18-24"	10/24/2013 1330	SO	1	x	x	x	x	x	x	x
STS-AMD-2013F-W3 6-12"	10/24/2013 1340	SO	1	x	x	x	x	x	x	x
STS-AMD-2013F-W4 0-6	10/24/2013 1305	SO	1	x	x	x				
STS-AMD-2013F-W5 0-6	10/24/2013 1258	SO	1	x	x	x				
STS-AMD-2013F-W6 0-6	10/24/2013 1240	SO	1	x	x	x				
STS-AMD-2013F-W7 0-6	10/24/2013 1250	SO	1	x	x	x				

COPY

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 3:00pm		
		MPL 10-30-13 10:05	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

L15305 Chain of Custody

①

ACZ Laboratories, Inc. L15305
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS
E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-W8 0-6	10/24/2013 1312	SO	1	x	x	x					
STS-AMD-2013F-E1 0-6	10/25/2013 0935	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E2 0-6	10/25/2013 0930	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E3 0-6	10/25/2013 0945	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E1 15-21	10/25/2013 1042	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E2 18-24	10/25/2013 1033	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E3 10-16	10/25/2013 1035	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-E4 0-6	10/25/2013 0955	SO	1	x	x	x					
STS-AMD-2013F-E5 0-6	10/25/2013 0950	SO	1	x	x	x					
STS-AMD-2013F-E6 0-6	10/25/2013 0952	SO	1	x	x	x					

COPY

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 3:00pm		
		LPL 10.30-13 10:05	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

②

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

November 21, 2013

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L15306

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15306. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15306. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 21, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-01***
Sample ID:	STS-AMD-2013F-E7 0-6	Date Sampled:	*10/25/13 09:58*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 11:35	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.13		*	mg/L	0.01	0.05	11/15/13 14:21	jjc
Copper, total (3050)	M6010B ICP	101	1070		*	mg/Kg	1	5	11/11/13 21:27	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/15/13 0:00	spl
pH		1	7.3		*	units	0.1	0.1	11/15/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	11/12/13 21:06	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:45	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 15:20	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 19:45	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:20	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 14:00	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15306-02***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 10:00*
Sample ID:	STS-AMD-2013F-E8 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 12:11	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.19		*	mg/L	0.01	0.05	11/15/13 14:30	jjc
Copper, total (3050)	M6010B ICP	101	1000		*	mg/Kg	1	5	11/11/13 21:36	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/15/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/15/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.0		*	%	0.1	0.5	11/13/13 1:19	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:47	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 18:11	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 19:49	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:29	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 16:55	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15306-03***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 17:17*
Sample ID:	STS-AMD-2013F-N1 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 12:23	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	7320			mg/Kg	20	100	11/11/13 21:42	jjc
Copper (1312)	M6010B ICP	1	0.10		*	mg/L	0.01	0.05	11/15/13 14:36	jjc
Copper, total (3050)	M6010B ICP	101	656		*	mg/Kg	1	5	11/11/13 21:42	jjc
Potassium, total (3050)	M6010B ICP	101	2880			mg/Kg	30	200	11/11/13 21:42	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 14:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 14:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/15/13 0:00	spl
pH		1	6		*	units	0.1	0.1	11/15/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.3		*	%	0.1	0.5	11/13/13 3:25	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:49	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 19:08	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 19:51	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:38	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 17:54	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 14:21	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.80			mg/Kg	0.02	0.1	11/20/13 16:38	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.83		*	mg/Kg	0.02	0.1	11/12/13 22:02	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.03	B	*	mg/Kg	0.01	0.05	11/12/13 22:02	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 15:47	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	140	0.055		*	%	0.001	0.007	11/12/13 13:48	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-04***
Sample ID:	STS-AMD-2013F-N2 0-6	Date Sampled:	*10/24/13 17:10*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 12:35	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	8680			mg/Kg	20	100	11/11/13 21:45	jjc
Copper (1312)	M6010B ICP	1	0.50		*	mg/L	0.01	0.05	11/15/13 14:39	jjc
Copper, total (3050)	M6010B ICP	102	1490		*	mg/Kg	1	5	11/11/13 21:45	jjc
Potassium, total (3050)	M6010B ICP	102	3110			mg/Kg	30	200	11/11/13 21:45	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	11/11/13 18:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	11/11/13 18:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/15/13 0:00	spl
pH		1	5.9		*	units	0.1	0.1	11/15/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.6		*	%	0.1	0.5	11/13/13 5:32	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:52	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 20:04	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 19:54	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:47	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 18:52	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 14:33	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		4.11			mg/Kg	0.06	0.3	11/20/13 16:38	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3	4.14		*	mg/Kg	0.06	0.3	11/12/13 22:28	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.03	B	*	mg/Kg	0.01	0.05	11/12/13 22:03	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	11/13/13 15:48	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	210	0.137		*	%	0.002	0.01	11/12/13 13:49	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-05***
Sample ID:	STS-AMD-2013F-N3 0-6	Date Sampled:	*10/24/13 17:25*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 12:47	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	7850			mg/Kg	20	100	11/11/13 21:54	jjc
Copper (1312)	M6010B ICP	1	0.21		*	mg/L	0.01	0.05	11/15/13 14:43	jjc
Copper, total (3050)	M6010B ICP	101	1460		*	mg/Kg	1	5	11/11/13 21:54	jjc
Potassium, total (3050)	M6010B ICP	101	2810			mg/Kg	30	200	11/11/13 21:54	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 20:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/11/13 20:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	5.7		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.1		*	%	0.1	0.5	11/13/13 7:38	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:54	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 21:01	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 19:56	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 14:56	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 19:51	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 14:45	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.83			mg/Kg	0.02	0.1	11/20/13 16:38	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	2.86		*	mg/Kg	0.02	0.1	11/12/13 22:04	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.03	B	*	mg/Kg	0.01	0.05	11/12/13 22:04	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	11/13/13 15:49	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	110	0.094		*	%	0.001	0.006	11/12/13 13:50	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N1 12-18"

ACZ Sample ID: ***L15306-06***
Date Sampled: *10/24/13 17:57*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 12:59	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	9100			mg/Kg	20	100	11/11/13 21:58	jjc
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/15/13 14:52	jjc
Copper, total (3050)	M6010B ICP	102	293		*	mg/Kg	1	5	11/11/13 21:58	jjc
Potassium, total (3050)	M6010B ICP	102	2670			mg/Kg	30	200	11/11/13 21:58	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/11/13 22:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/11/13 22:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	7.2		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.0		*	%	0.1	0.5	11/13/13 9:45	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:56	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 21:58	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 19:58	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:06	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 20:49	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 14:57	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.39			mg/Kg	0.02	0.1	11/20/13 16:38	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.45		*	mg/Kg	0.02	0.1	11/12/13 22:05	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.06		*	mg/Kg	0.01	0.05	11/12/13 22:05	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	1	B	*	mg/Kg	1	10	11/13/13 15:51	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	190	0.085		*	%	0.002	0.01	11/12/13 13:51	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15306-07***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 18:10*
Sample ID:	STS-AMD-2013F-N2 15-21"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 13:11	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	105	17300			mg/Kg	20	100	11/11/13 22:01	jjc
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/15/13 14:55	jjc
Copper, total (3050)	M6010B ICP	105	308		*	mg/Kg	1	5	11/11/13 22:01	jjc
Potassium, total (3050)	M6010B ICP	105	2410			mg/Kg	30	200	11/11/13 22:01	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/12/13 0:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	11/12/13 0:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	82.9		*	%	0.1	0.5	11/13/13 11:51	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 10:59	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 22:55	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:15	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 21:48	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 15:09	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.12			mg/Kg	0.02	0.1	11/20/13 16:39	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	1.20		*	mg/Kg	0.02	0.1	11/12/13 22:09	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.08		*	mg/Kg	0.01	0.05	11/12/13 22:09	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	0.5	B	*	mg/Kg	0.5	5	11/13/13 15:54	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	210	0.063		*	%	0.002	0.01	11/12/13 14:44	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-N3 18-24"
ACZ Sample ID:	***L15306-08***
Date Sampled:	*10/24/13 18:00*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 13:23	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	104	13300			mg/Kg	20	100	11/11/13 22:04	jjc
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/15/13 14:58	jjc
Copper, total (3050)	M6010B ICP	104	363		*	mg/Kg	1	5	11/11/13 22:04	jjc
Potassium, total (3050)	M6010B ICP	104	2540			mg/Kg	30	200	11/11/13 22:04	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/12/13 2:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 2:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	7.4		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	83.8		*	%	0.1	0.5	11/13/13 13:57	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:01	spl
Digestion - Hot Plate	M3050B ICP								11/08/13 23:52	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:03	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:24	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 22:46	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 15:22	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.02			mg/Kg	0.02	0.1	11/20/13 16:39	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	1.09		*	mg/Kg	0.02	0.1	11/12/13 22:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.07		*	mg/Kg	0.01	0.05	11/12/13 22:10	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	11/13/13 16:11	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.027		*	%	0.002	0.01	11/12/13 14:45	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N4 0-6

ACZ Sample ID: ***L15306-09***
Date Sampled: *10/24/13 17:23*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 13:35	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05		*	mg/L	0.01	0.05	11/15/13 15:01	jjc
Copper, total (3050)	M6010B ICP	103	418		*	mg/Kg	1	5	11/11/13 22:07	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	6.8		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.0		*	%	0.1	0.5	11/13/13 16:04	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:03	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 0:49	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:05	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:33	spl
Synthetic Precip. Leaching Procedure	M1312								11/12/13 23:45	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N5 0-6

ACZ Sample ID: ***L15306-10***
Date Sampled: *10/24/13 17:21*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 13:47	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09		*	mg/L	0.01	0.05	11/15/13 15:04	jjc
Copper, total (3050)	M6010B ICP	102	210		*	mg/Kg	1	5	11/11/13 22:10	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.5		*	%	0.1	0.5	11/13/13 18:10	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:06	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 1:46	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:07	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:42	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 0:44	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-11***
Sample ID:	STS-AMD-2013F-N6 0-6	Date Sampled:	*10/24/13 17:14*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 14:11	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.20		*	mg/L	0.01	0.05	11/15/13 15:10	jjc
Copper, total (3050)	M6010B ICP	101	1340		*	mg/Kg	1	5	11/11/13 22:13	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	6.1		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.1		*	%	0.1	0.5	11/13/13 20:17	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:08	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 2:43	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:09	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 15:52	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 2:41	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-12***
Sample ID:	STS-AMD-2013F-N7 0-6	Date Sampled:	*10/24/13 17:08*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 14:23	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.56		*	mg/L	0.01	0.05	11/15/13 15:13	jjc
Copper, total (3050)	M6010B ICP	102	1740		*	mg/Kg	1	5	11/11/13 22:17	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	5		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	11/13/13 22:23	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:11	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 3:39	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:12	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:01	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 3:39	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15306-13***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 17:30*
Sample ID:	STS-AMD-2013F-N8 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 14:35	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09		*	mg/L	0.01	0.05	11/15/13 15:17	jjc
Copper, total (3050)	M6010B ICP	101	459		*	mg/Kg	1	5	11/11/13 22:20	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	6.3		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.5		*	%	0.1	0.5	11/14/13 0:30	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:13	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 4:36	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:14	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:10	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 4:38	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE1 0-6

ACZ Sample ID: ***L15306-14***
Date Sampled: *10/24/13 09:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:52	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 14:47	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	8000			mg/Kg	20	100	11/11/13 22:23	jjc
Copper (1312)	M6010B ICP	1	0.53		*	mg/L	0.01	0.05	11/15/13 15:20	jjc
Copper, total (3050)	M6010B ICP	101	2190		*	mg/Kg	1	5	11/11/13 22:23	jjc
Potassium, total (3050)	M6010B ICP	101	4630			mg/Kg	30	200	11/11/13 22:23	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.6		*	%	0.1	0.5	11/12/13 4:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	2		*	%	0.1	0.5	11/12/13 4:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	7.1		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.8		*	%	0.1	0.5	11/14/13 2:36	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:15	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 5:33	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:16	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:19	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 5:36	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 15:34	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.04			mg/Kg	0.02	0.1	11/20/13 16:39	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	3.14		*	mg/Kg	0.02	0.1	11/12/13 22:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.10		*	mg/Kg	0.01	0.05	11/12/13 22:11	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 15:56	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	170	0.149		*	%	0.002	0.009	11/12/13 14:46	tcd

Arizona license number: AZ0102

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE2 0-6

ACZ Sample ID: ***L15306-15***
Date Sampled: *10/24/13 09:20*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:53	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 14:59	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	5790			mg/Kg	20	100	11/11/13 22:32	jjc
Copper (1312)	M6010B ICP	1	5.79		*	mg/L	0.01	0.05	11/15/13 15:29	jjc
Copper, total (3050)	M6010B ICP	102	4620		*	mg/Kg	1	5	11/11/13 22:32	jjc
Potassium, total (3050)	M6010B ICP	102	3340			mg/Kg	30	200	11/11/13 22:32	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.2		*	%	0.1	0.5	11/12/13 6:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.8		*	%	0.1	0.5	11/12/13 6:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	4.4		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.6		*	%	0.1	0.5	11/14/13 4:42	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:18	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 6:30	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:18	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:29	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 6:35	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 15:46	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		5.37			mg/Kg	0.06	0.3	11/20/13 16:40	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3	5.37		*	mg/Kg	0.06	0.3	11/12/13 22:29	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1		U	*	mg/Kg	0.01	0.05	11/12/13 22:12	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	26.7		*	mg/Kg	0.5	5	11/13/13 16:12	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	220	0.276		*	%	0.002	0.01	11/12/13 14:47	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-16***
Sample ID:	STS-AMD-2013F-NE3 0-6	Date Sampled:	*10/24/13 09:15*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:53	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 15:11	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	101	4950			mg/Kg	20	100	11/11/13 22:35	jjc
Copper (1312)	M6010B ICP	1	0.42		*	mg/L	0.01	0.05	11/15/13 15:32	jjc
Copper, total (3050)	M6010B ICP	101	2780		*	mg/Kg	1	5	11/11/13 22:35	jjc
Potassium, total (3050)	M6010B ICP	101	3460			mg/Kg	30	200	11/11/13 22:35	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.8		*	%	0.1	0.5	11/12/13 8:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	11/12/13 8:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	5.3		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.6		*	%	0.1	0.5	11/14/13 6:49	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:20	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 7:27	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:21	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:38	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 7:33	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 16:10	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.88			mg/Kg	0.02	0.1	11/20/13 16:40	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	1.90		*	mg/Kg	0.02	0.1	11/12/13 22:16	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 22:16	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	1.3	B	*	mg/Kg	0.5	5	11/13/13 17:45	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	120	0.102		*	%	0.001	0.006	11/12/13 14:50	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE1 15-21"

ACZ Sample ID: ***L15306-17***
Date Sampled: *10/24/13 10:50*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:53	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 15:23	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	7020			mg/Kg	20	100	11/11/13 22:38	jjc
Copper (1312)	M6010B ICP	1	0.25		*	mg/L	0.01	0.05	11/15/13 15:35	jjc
Copper, total (3050)	M6010B ICP	103	1090		*	mg/Kg	1	5	11/11/13 22:38	jjc
Potassium, total (3050)	M6010B ICP	103	4220			mg/Kg	30	200	11/11/13 22:38	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	11/12/13 10:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	11/12/13 10:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	6.8		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	87.5		*	%	0.1	0.5	11/14/13 8:55	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:22	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 8:24	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:23	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:47	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 8:32	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 16:23	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.94			mg/Kg	0.02	0.1	11/20/13 16:40	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	1.0		*	mg/Kg	0.02	0.1	11/12/13 22:18	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.06		*	mg/Kg	0.01	0.05	11/12/13 22:18	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25	2	B	*	mg/Kg	1	10	11/13/13 17:47	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	220	0.095		*	%	0.002	0.01	11/12/13 14:53	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-18***
Sample ID:	STS-AMD-2013F-NE2 15-21"	Date Sampled:	*10/24/13 11:10*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 15:35	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	104	8860			mg/Kg	20	100	11/11/13 22:41	jjc
Copper (1312)	M6010B ICP	1	0.10		*	mg/L	0.01	0.05	11/15/13 15:38	jjc
Copper, total (3050)	M6010B ICP	104	2530		*	mg/Kg	1	5	11/11/13 22:41	jjc
Potassium, total (3050)	M6010B ICP	104	3570			mg/Kg	30	200	11/11/13 22:41	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.6		*	%	0.1	0.5	11/12/13 12:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	11/12/13 12:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	6.9		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	82.8		*	%	0.1	0.5	11/14/13 11:02	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:25	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 9:21	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:25	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 16:56	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 9:31	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 16:35	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.97			mg/Kg	0.02	0.1	11/20/13 16:40	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	2.99		*	mg/Kg	0.02	0.1	11/12/13 22:19	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 22:19	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	3.3		*	mg/Kg	0.3	3	11/13/13 17:48	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	150	0.092		*	%	0.002	0.008	11/12/13 14:57	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE3 6-12"

ACZ Sample ID: ***L15306-19***
Date Sampled: *10/24/13 11:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/14/13 15:47	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	4890			mg/Kg	20	100	11/11/13 22:44	jjc
Copper (1312)	M6010B ICP	1	0.18		*	mg/L	0.01	0.05	11/15/13 15:41	jjc
Copper, total (3050)	M6010B ICP	102	1910		*	mg/Kg	1	5	11/11/13 22:44	jjc
Potassium, total (3050)	M6010B ICP	102	3220			mg/Kg	30	200	11/11/13 22:44	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	11/12/13 14:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.4		*	%	0.1	0.5	11/12/13 14:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	5.5		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.2		*	%	0.1	0.5	11/14/13 13:08	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:27	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 10:17	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:27	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 17:05	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 10:29	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/11/13 16:47	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.0			mg/Kg	0.02	0.1	11/20/13 16:40	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	3.02		*	mg/Kg	0.02	0.1	11/12/13 22:23	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1	0.02	B	*	mg/Kg	0.01	0.05	11/12/13 22:23	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	1.1	B	*	mg/Kg	0.5	5	11/13/13 17:50	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	210	0.100		*	%	0.002	0.01	11/12/13 14:58	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15306-20***
Sample ID:	STS-AMD-2013F-NE4 0-6	Date Sampled:	*10/24/13 09:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/14/13 15:59	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.29		*	mg/L	0.01	0.05	11/15/13 15:44	jjc
Copper, total (3050)	M6010B ICP	102	2100		*	mg/Kg	1	5	11/11/13 22:47	jjc

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/16/13 0:00	spl
pH		1	5.3		*	units	0.1	0.1	11/16/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.3		*	%	0.1	0.5	11/14/13 15:15	spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/02/13 11:29	spl
Digestion - Hot Plate	M3050B ICP								11/09/13 11:14	spl
Saturated Paste Extraction	USDA No. 60 (2)				*				11/15/13 20:30	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/06/13 17:15	spl
Synthetic Precip. Leaching Procedure	M1312								11/13/13 11:28	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354634													
WG354634ICV	ICV	11/11/13 21:02	II130820-1	100		100.6	mg/L	100.6	90	110			
WG354634ICB	ICB	11/11/13 21:05				U	mg/L		-0.6	0.6			
WG354566PBS	PBS	11/11/13 21:17				U	mg/Kg		-60	60			
WG354566LCSS	LCSS	11/11/13 21:20	PCN42472	7890		7928	mg/Kg		6500	9290			
WG354566LCSSD	LCSSD	11/11/13 21:24	PCN42472	7890		7959	mg/Kg		6500	9290	0.4	20	
L15306-01MS	MS	11/11/13 21:30	II131029-2	6868.22725	3670	11039	mg/Kg	107.3	75	125			
L15306-01MSD	MSD	11/11/13 21:33	II131029-2	6868.22725	3670	11868	mg/Kg	119.4	75	125	7.24	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354629													
WG354629PBS	PBS	11/11/13 10:00				U	%		-0.3	0.3			
WG354629LCSS	LCSS	11/11/13 12:00	PCN42350	4.19		4.3	%		80	120			
L15306-03DUP	DUP	11/11/13 16:00			1.1	1.1	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354629													
WG354629PBS	PBS	11/11/13 10:00				U	%		-0.3	0.3			
L15306-03DUP	DUP	11/11/13 16:00			1.1	.9	%				20	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354930													
WG354930ICV	ICV	11/15/13 13:59	II131111-1	2		1.934	mg/L	96.7	90	110			
WG354930ICB	ICB	11/15/13 14:02				U	mg/L		-0.03	0.03			
WG354725PBS	PBS	11/15/13 14:15				U	mg/L		-0.03	0.03			
WG354725LFB	LFB	11/15/13 14:18	II131029-2	.5		.503	mg/L	100.6	85	115			
L15306-01MS	MS	11/15/13 14:24	II131029-2	.5	.13	.639	mg/L	101.8	75	125			
L15306-01MSD	MSD	11/15/13 14:27	II131029-2	.5	.13	.639	mg/L	101.8	75	125	0	20	
L15306-10DUP	DUP	11/15/13 15:07			.09	.097	mg/L				7.5	20	RA

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354634													
WG354634ICV	ICV	11/11/13 21:02	II130820-1	2		1.951	mg/L	97.6	90	110			
WG354634ICB	ICB	11/11/13 21:05				U	mg/L		-0.03	0.03			
WG354566PBS	PBS	11/11/13 21:17				U	mg/Kg		-3	3			
WG354566LCSS	LCSS	11/11/13 21:20	PCN42472	162		153.4	mg/Kg		135	190			
WG354566LCSSD	LCSSD	11/11/13 21:24	PCN42472	162		160.5	mg/Kg		135	190	4.5	20	
L15306-01MS	MS	11/11/13 21:30	II131029-2	50.5	1070	1213	mg/Kg	283.2	75	125			M3
L15306-01MSD	MSD	11/11/13 21:33	II131029-2	50.5	1070	1272.6	mg/Kg	401.2	75	125	4.8	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354762													
WG354762ICV	ICV	11/12/13 16:41	WI131015-1	2.416		2.358	mg/L	97.6	90	110			
WG354762ICB	ICB	11/12/13 16:42				U	mg/L		-0.06	0.06			
WG354762LFB1	LFB	11/12/13 21:40	WI130816-3	2		2.032	mg/Kg	101.6	90	110			
WG354643PBS1	PBS	11/12/13 21:41				U	mg/Kg		-0.06	0.06			
WG354643PBS2	PBS	11/12/13 22:14				.037	mg/Kg		-0.06	0.06			
WG354762LFB2	LFB	11/12/13 22:15	WI130816-3	2		1.996	mg/Kg	99.8	90	110			
L15306-16AS	AS	11/12/13 22:17	WI130816-3	2	1.9	3.953	mg/Kg	102.7	90	110			
L15306-19DUP	DUP	11/12/13 22:24			3.02	2.567	mg/Kg				16.2	20	

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354762													
WG354762ICV	ICV	11/12/13 16:41	WI131015-1	.609		.606	mg/L	99.5	90	110			
WG354762ICB	ICB	11/12/13 16:42				U	mg/L		-0.03	0.03			
WG354762LFB1	LFB	11/12/13 21:40	WI130816-3	1		1.028	mg/Kg	102.8	90	110			
WG354643PBS1	PBS	11/12/13 21:41				U	mg/Kg		-0.03	0.03			
WG354643PBS2	PBS	11/12/13 22:14				U	mg/Kg		-0.03	0.03			
WG354762LFB2	LFB	11/12/13 22:15	WI130816-3	1		1.025	mg/Kg	102.5	90	110			
L15306-16AS	AS	11/12/13 22:17	WI130816-3	1	.02	1.081	mg/Kg	106.1	90	110			
L15306-19DUP	DUP	11/12/13 22:24			.02	.021	mg/Kg				4.9	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354803													
WG354803ICV	ICV	11/13/13 15:23	WI131021-1	1.003		1.009	mg/L	100.6	90	110			
WG354803ICB	ICB	11/13/13 15:27				U	mg/L		-0.15	0.15			
WG354803LFB1	LFB	11/13/13 15:28	WI121218-3	1		1.035	mg/Kg	103.5	90	110			
WG354643PBS1	PBS	11/13/13 15:29				.4	mg/Kg		-0.9	0.9			
WG354643PBS2	PBS	11/13/13 15:58				U	mg/Kg		-0.9	0.9			
WG354803LFB2	LFB	11/13/13 15:59	WI121218-3	1		1.036	mg/Kg	103.6	90	110			
L15306-18AS	AS	11/13/13 17:49	WI121218-3	5	3.3	8.45	mg/Kg	103	75	125			
L15306-19DUP	DUP	11/13/13 17:51			1.1	1.77	mg/Kg				46.7	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354723													
WG354723ICV	ICV	11/12/13 13:25	WI131021-2	4		4.06	mg/L	101.5	90	110			
WG354723ICB	ICB	11/12/13 13:26				U	mg/L		-0.3	0.3			
WG354667PBS1	PBS	11/12/13 13:27				U	%		-0.006	0.006			
WG354667LFB1	LFB	11/12/13 13:29	WI130930-4	2.5		2.25	%	90	85	115			
WG354723ICV1	ICV	11/12/13 14:41	WI131021-2	4		4.05	mg/L	101.3	90	110			
WG354723ICB1	ICB	11/12/13 14:43				U	mg/L		-0.3	0.3			
WG354667PBS2	PBS	11/12/13 14:48				U	%		-0.3	0.3			
L15306-16MS	MS	11/12/13 14:52	WI130930-4	525	.102	.2083	%	202.5	75	125			M1
L15306-17DUP	DUP	11/12/13 14:54			.095	.141	%				39	20	RD
WG354667LFB2	LFB	11/12/13 15:06	WI130930-4	2.5		2.51	%	100.4	85	115			

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354982													
WG354982ICV	ICV	11/15/13 21:21	PCN42578	4		4.01	units	100.3	97	103			
L15306-01DUP	DUP	11/15/13 22:21			7.3	7.22	units				1.1	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354634													
WG354634ICV	ICV	11/11/13 21:02	II130820-1	20		20.06	mg/L	100.3	90	110			
WG354634ICB	ICB	11/11/13 21:05				U	mg/L		-0.9	0.9			
WG354566PBS	PBS	11/11/13 21:17				U	mg/Kg		-90	90			
WG354566LCSS	LCSS	11/11/13 21:20	PCN42472	2600		2676	mg/Kg		1720	3470			
WG354566LCSSD	LCSSD	11/11/13 21:24	PCN42472	2600		2686	mg/Kg		1720	3470	0.4	20	
L15306-01MS	MS	11/11/13 21:30	II131029-2	10094.48439	3010	13504	mg/Kg	104	75	125			
L15306-01MSD	MSD	11/11/13 21:33	II131029-2	10094.48439	3010	13686	mg/Kg	105.8	75	125	1.34	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354759													
WG354759PBS	PBS	11/12/13 19:00				U	%		99.9	100.1			
L15306-01DUP	DUP	11/12/13 23:12			95.6	95.53	%				0.1	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-01	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15306-02	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15306-03	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-04	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15306***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-05	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-06	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15306***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-07	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L15306-08	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-09	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15306-10	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15306-11	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15306-12	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15306-13	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-14	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L15306-15	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-16	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L15306-17	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-18	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L15306-19	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354629	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354762	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354803	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15306-20	WG354930	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354634	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15306
Date Received: 10/30/2013 10:06
Received By: mtb
Date Printed: 10/31/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3041	13	14	Yes
3226	10.4	13	Yes
3251	13.5	13	Yes
3403	12	14	Yes
3627	12.3	13	Yes
3721	12.9	13	Yes
3834	11.1	13	Yes
3991	12	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15306
Date Received:	10/30/2013 10:06
Received By:	mtb
Date Printed:	10/31/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15306

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L15306 Chain of Custody

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION | **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-E7 0-6	10/25/2013 0958	SO	1	x	x	x					
STS-AMD-2013F-E8 0-6	10/25/2013 1000	SO	1	x	x	x					
STS-AMD-2013F-N1 0-6	10/24/2013 1717	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N2 0-6	10/24/2013 1710	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N3 0-6	10/24/2013 1725	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N1 12-18"	10/24/2013 1757	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N2 15-21"	10/24/2013 1810	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N3 18-24"	10/24/2013 1800	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N4 0-6	10/24/2013 1723	SO	1	x	x	x					
STS-AMD-2013F-N5 0-6	10/24/2013 1721	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13-3:00pm		
		JPL 10-30-13 10:19	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

①

ACZ Laboratories, Inc. L15306

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION — **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-N6 0-6	10/24/2013 1714	SO	1	x	x	x					
STS-AMD-2013F-N7 0-6	10/24/2013 1708	SO	1	x	x	x					
STS-AMD-2013F-N8 0-6	10/24/2013 1730	SO	1	x	x	x					
STS-AMD-2013F-NE1 0-6	10/24/2013 0930	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NE2 0-6	10/24/2013 0920	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NE3 0-6	10/24/2013 0915	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NE1 15-21"	10/24/2013 1050	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NE2 15-21"	10/24/2013 1110	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NE3 6-12"	10/24/2013 1100	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NE4 0-6	10/24/2013 0900	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/ 3:00pm		
		NPL 10-30-13 10:18	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

(2)

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

November 22, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15307

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15307. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15307. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 22, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

November 22, 2013

Project ID: ZN000001M5
ACZ Project ID: L15307

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 20 soil samples from Freeport-McMoRan - Chino Mines Company on October 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L15307. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The following modifications have been made to the SPLP Copper analysis (N1):

1) The soil to solution ratio was reduced to better simulate soils wetted by rainfall. A ratio of 1:5 soil:solution should be used for chemical analysis.

2) A 0.01 M $CaCl_2$ lixiviant was used instead of deionized water to better simulate the ionic strength of soil solutions (after Sauve et al. 1995); and

3) No adjustment to the initial pH of the soil solution to 5, as is commonly done in the Standard Method 1312 implementation. This step is taken to help ensure that the pH of the soil solution is due to the elements of the solution, not an outside source of acid.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15307-01***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 09:58*
Sample ID:	STS-AMD-2013F-E7 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 9:24	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	11/18/13 10:10	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 0:17	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-E8 0-6

ACZ Sample ID: ***L15307-02***
Date Sampled: *10/25/13 10:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 10:00	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.16			mg/L	0.01	0.05	11/18/13 10:19	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 4:56	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N1 0-6

ACZ Sample ID: ***L15307-03***
Date Sampled: *10/24/13 17:17*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 10:12	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12			mg/L	0.01	0.05	11/18/13 10:23	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 6:29	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N2 0-6

ACZ Sample ID: ***L15307-04***
Date Sampled: *10/24/13 17:10*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 10:24	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.66			mg/L	0.01	0.05	11/18/13 10:26	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 8:01	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15307-05***
Sample ID:	STS-AMD-2013F-N3 0-6	Date Sampled:	*10/24/13 17:25*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 10:36	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.37			mg/L	0.01	0.05	11/18/13 10:29	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 9:34	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15307-06***
Sample ID:	STS-AMD-2013F-N1 12-18"	Date Sampled:	*10/24/13 17:57*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 10:48	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/18/13 10:32	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 11:07	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-N2 15-21"

ACZ Sample ID:	***L15307-07***
Date Sampled:	*10/24/13 18:10*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 11:00	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	11/18/13 10:41	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 14:13	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15307-08***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 18:00*
Sample ID:	STS-AMD-2013F-N3 18-24"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 11:12	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	11/18/13 10:44	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 15:46	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N4 0-6

ACZ Sample ID: ***L15307-09***
Date Sampled: *10/24/13 17:23*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 11:25	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	11/18/13 10:51	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 17:19	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15307-10***
Sample ID:	STS-AMD-2013F-N5 0-6	Date Sampled:	*10/24/13 17:21*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 11:37	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	11/18/13 10:54	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 18:52	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-N6 0-6

ACZ Sample ID:	***L15307-11***
Date Sampled:	*10/24/13 17:14*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 11:49	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.39			mg/L	0.01	0.05	11/18/13 10:57	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 20:25	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-N7 0-6

ACZ Sample ID:	***L15307-12***
Date Sampled:	*10/24/13 17:08*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 12:01	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	3.02			mg/L	0.01	0.05	11/18/13 11:00	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 21:58	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-N8 0-6

ACZ Sample ID: ***L15307-13***
Date Sampled: *10/24/13 17:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 12:13	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.06			mg/L	0.01	0.05	11/18/13 11:03	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/13/13 23:30	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE1 0-6

ACZ Sample ID: ***L15307-14***
Date Sampled: *10/24/13 09:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 12:25	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.55			mg/L	0.01	0.05	11/18/13 11:06	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 1:03	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15307-15***
Sample ID:	STS-AMD-2013F-NE2 0-6	Date Sampled:	*10/24/13 09:20*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 12:37	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	50.0			mg/L	0.01	0.05	11/18/13 11:09	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 2:36	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15307-16***
Sample ID:	STS-AMD-2013F-NE3 0-6	Date Sampled:	*10/24/13 09:15*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 12:49	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	2.15			mg/L	0.01	0.05	11/18/13 11:19	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 5:42	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15307-17***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 10:50*
Sample ID:	STS-AMD-2013F-NE1 15-21"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 13:01	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.23			mg/L	0.01	0.05	11/18/13 11:22	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 7:15	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15307-18***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 11:10*
Sample ID:	STS-AMD-2013F-NE2 15-21"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 13:13	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.20			mg/L	0.01	0.05	11/18/13 11:25	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 8:48	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15307-19***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 11:00*
Sample ID:	STS-AMD-2013F-NE3 6-12"	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 13:25	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.86			mg/L	0.01	0.05	11/18/13 11:28	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 10:21	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE4 0-6

ACZ Sample ID: ***L15307-20***
Date Sampled: *10/24/13 09:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/15/13 13:37	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.17			mg/L	0.01	0.05	11/18/13 11:31	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 11:54	mss2/br

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355007													
WG355007ICV	ICV	11/18/13 9:48	II131111-1	2		1.923	mg/L	96.2	90	110			
WG355007ICB	ICB	11/18/13 9:51				U	mg/L		-0.03	0.03			
WG354726PBS	PBS	11/18/13 10:04				U	mg/L		-0.03	0.03			
WG354726LFB	LFB	11/18/13 10:07	II131029-2	.5		.525	mg/L	105	85	115			
L15307-01MS	MS	11/18/13 10:13	II131029-2	.5	.09	.614	mg/L	104.8	75	125			
L15307-01MSD	MSD	11/18/13 10:16	II131029-2	.5	.09	.624	mg/L	106.8	75	125	1.62	20	
L15307-20DUP	DUP	11/18/13 11:34			1.17	1.199	mg/L				2.4	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15307-01	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-02	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-03	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-04	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-05	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-06	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-07	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-08	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-09	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-10	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-11	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-12	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-13	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-14	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-15	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-16	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-17	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-18	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-19	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15307-20	WG354726	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15307
Date Received: 10/30/2013 10:06
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
3041           13             14               Yes
3226           10.4           13               Yes
3251           13.5           13               Yes
3403           12             14               Yes
3627           12.3           13               Yes
3721           12.9           13               Yes
3834           11.1           13               Yes
3991           12             15               Yes
```

Was ice present in the shipment container(s)?

```
No - Wet or gel ice was not present in the shipment container(s).
```

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15307
Date Received: 10/30/2013 10:06
Received By: mtb
Date Printed: 10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15307

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L15307 Chain of Custody

Report to:

Name: Pam Pinson	Address: P.O. Box 10 Bayard, NM 88023
Company: Chino Mines Company	
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10 Bayard, NM 88023
Company: Chino Mines Company	
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Patrick Quinn

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-E7 0-6	10/25/2013 0958	SO	1	x	x	x					
STS-AMD-2013F-E8 0-6	10/25/2013 1000	SO	1	x	x	x					
STS-AMD-2013F-N1 0-6	10/24/2013 1717	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N2 0-6	10/24/2013 1710	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N3 0-6	10/24/2013 1725	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N1 12-18"	10/24/2013 1757	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N2 15-21"	10/24/2013 1810	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N3 18-24"	10/24/2013 1800	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-N4 0-6	10/24/2013 1723	SO	1	x	x	x					
STS-AMD-2013F-N5 0-6	10/24/2013 1721	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 - 3:00pm		
		LRC 10-30-13 10:18	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

1

ACZ Laboratories, Inc. L15307

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-N6 0-6	10/24/2013 1714	SO	1	X	X	X					
STS-AMD-2013F-N7 0-6	10/24/2013 1708	SO	1	X	X	X					
STS-AMD-2013F-N8 0-6	10/24/2013 1730	SO	1	X	X	X					
STS-AMD-2013F-NE1 0-6	10/24/2013 0930	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NE2 0-6	10/24/2013 0920	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NE3 0-6	10/24/2013 0915	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NE1 15-21"	10/24/2013 1050	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NE2 15-21"	10/24/2013 1110	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NE3 6-12"	10/24/2013 1100	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NE4 0-6	10/24/2013 0900	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

COPY

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/ 3:00pm		
		LPC 10.30.13 10:18	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

②

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 25, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15308

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15308. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15308. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 25, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE5 0-6

ACZ Sample ID: ***L15308-01***
Date Sampled: *10/24/13 09:05*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 10:14	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.14			mg/L	0.01	0.05	11/18/13 22:56	jjc
Copper, total (3050)	M6010B ICP	103	1840		*	mg/Kg	1	5	11/15/13 12:16	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.8		*	%	0.1	0.5	11/13/13 17:05	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:15	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 9:57	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 15:45	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:15	rjv
Synthetic Precip. Leaching Procedure	M1312								11/14/13 21:01	spl

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-02***
Sample ID:	STS-AMD-2013F-NE6 0-6	Date Sampled:	*10/24/13 09:40*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 10:38	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.61			mg/L	0.01	0.05	11/18/13 23:02	jjc
Copper, total (3050)	M6010B ICP	104	2470		*	mg/Kg	1	5	11/15/13 12:19	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.0		*	%	0.1	0.5	11/13/13 19:17	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:17	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 10:16	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 16:10	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:20	rjv
Synthetic Precip. Leaching Procedure	M1312								11/14/13 22:42	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE7 0-6

ACZ Sample ID: ***L15308-03***
Date Sampled: *10/24/13 09:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 11:15	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.19			mg/L	0.01	0.05	11/18/13 23:11	jjc
Copper, total (3050)	M6010B ICP	105	1910		*	mg/Kg	1	5	11/15/13 12:22	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.3		*	%	0.1	0.5	11/13/13 20:22	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:19	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 10:36	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 16:23	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:26	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 1:13	spl

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-04***
Sample ID:	STS-AMD-2013F-NE8 0-6	Date Sampled:	*10/24/13 09:10*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 11:27	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.06			mg/L	0.01	0.05	11/18/13 23:17	jjc
Copper, total (3050)	M6010B ICP	104	1710		*	mg/Kg	1	5	11/15/13 12:25	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.7		*	%	0.1	0.5	11/13/13 21:28	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:22	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 10:55	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 16:36	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:31	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 2:03	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF1 0-6

ACZ Sample ID: ***L15308-05***
Date Sampled: *10/24/13 15:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/18/13 11:39	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	20500		*	mg/Kg	20	100	11/15/13 12:28	aeb
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	11/18/13 23:27	jjc
Copper, total (3050)	M6010B ICP	103	1010		*	mg/Kg	1	5	11/15/13 12:28	aeb
Potassium, total (3050)	M6010B ICP	103	3530			mg/Kg	30	200	11/15/13 12:28	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	11/11/13 17:16	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	11/11/13 17:16	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.6		*	%	0.1	0.5	11/13/13 22:34	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:24	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 11:14	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 16:48	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:37	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 2:54	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 8:59	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.5			mg/Kg	0.1	0.5	11/22/13 16:01	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.6		*	mg/Kg	0.1	0.5	11/13/13 22:06	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.09	B	*	mg/Kg	0.05	0.3	11/13/13 22:06	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10		U	*	mg/Kg	0.5	5	11/13/13 16:55	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	130	0.090		*	%	0.001	0.007	11/12/13 15:00	tcd

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF2 0-6

ACZ Sample ID: ***L15308-06***
Date Sampled: *10/24/13 15:25*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/18/13 11:51	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	16600		*	mg/Kg	20	100	11/15/13 12:44	aeb
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	11/18/13 23:30	jjc
Copper, total (3050)	M6010B ICP	102	1560		*	mg/Kg	1	5	11/15/13 12:44	aeb
Potassium, total (3050)	M6010B ICP	102	3160			mg/Kg	30	200	11/15/13 12:44	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	11/11/13 19:32	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 19:32	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.5		*	%	0.1	0.5	11/13/13 23:40	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:26	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 12:12	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 17:01	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:42	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 4:34	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 9:27	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.3	B		mg/Kg	0.1	0.5	11/22/13 16:01	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.4	B	*	mg/Kg	0.1	0.5	11/13/13 22:09	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.10	B	*	mg/Kg	0.05	0.3	11/13/13 22:09	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10		U	*	mg/Kg	0.5	5	11/13/13 16:57	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	150	0.106		*	%	0.002	0.008	11/12/13 15:01	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF1 12-18"

ACZ Sample ID: ***L15308-07***
Date Sampled: *10/24/13 15:45*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/18/13 12:03	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	73300		*	mg/Kg	20	100	11/15/13 12:47	aeb
Copper (1312)	M6010B ICP	1	0.01	B		mg/L	0.01	0.05	11/18/13 23:33	jjc
Copper, total (3050)	M6010B ICP	103	397		*	mg/Kg	1	5	11/15/13 12:47	aeb
Potassium, total (3050)	M6010B ICP	103	3110			mg/Kg	30	200	11/15/13 12:47	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	3.4		*	%	0.1	0.5	11/11/13 20:40	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/11/13 20:40	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.1		*	%	0.1	0.5	11/14/13 0:45	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:29	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 12:31	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 17:14	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:48	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 5:25	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 9:42	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.7			mg/Kg	0.1	0.5	11/22/13 16:01	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1.8		*	mg/Kg	0.1	0.5	11/13/13 22:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.11	B	*	mg/Kg	0.05	0.3	11/13/13 22:10	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.4	B	*	mg/Kg	0.3	3	11/13/13 16:58	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	180	0.102		*	%	0.002	0.009	11/12/13 15:02	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF2 12-18"

ACZ Sample ID: ***L15308-08***
Date Sampled: *10/24/13 15:43*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/18/13 12:16	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	104	57500		*	mg/Kg	20	100	11/15/13 12:50	aeb
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	11/18/13 23:36	jjc
Copper, total (3050)	M6010B ICP	104	726		*	mg/Kg	1	5	11/15/13 12:50	aeb
Potassium, total (3050)	M6010B ICP	104	3000			mg/Kg	30	200	11/15/13 12:50	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.7		*	%	0.1	0.5	11/11/13 21:49	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	11/11/13 21:49	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.9		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.6		*	%	0.1	0.5	11/14/13 1:51	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:31	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 12:50	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 17:27	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:53	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 6:15	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 9:56	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.0			mg/Kg	0.1	0.5	11/22/13 16:01	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1.1		*	mg/Kg	0.1	0.5	11/13/13 22:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.06	B	*	mg/Kg	0.05	0.3	11/13/13 22:11	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	0.6	B	*	mg/Kg	0.5	5	11/13/13 16:59	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	130	0.076		*	%	0.001	0.007	11/12/13 15:03	tcd

Arizona license number: AZ0102

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15308-09***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 15:20*
Sample ID:	STS-AMD-2013F-WREF3 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 12:28	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	11/18/13 23:39	jjc
Copper, total (3050)	M6010B ICP	102	591		*	mg/Kg	1	5	11/15/13 12:53	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.4		*	%	0.1	0.5	11/14/13 2:57	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:33	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 13:09	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 17:39	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 10:59	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 7:05	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-10***
Sample ID:	STS-AMD-2013F-WREF4 0-6	Date Sampled:	*10/24/13 15:05*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 12:40	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.13			mg/L	0.01	0.05	11/18/13 23:42	jjc
Copper, total (3050)	M6010B ICP	102	1440		*	mg/Kg	1	5	11/15/13 13:00	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.8		*	%	0.1	0.5	11/14/13 4:02	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:36	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 13:28	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 17:52	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:04	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 7:56	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-11***
Sample ID:	STS-AMD-2013F-WREF5 0-6	Date Sampled:	*10/24/13 15:23*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 12:52	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12			mg/L	0.01	0.05	11/18/13 23:45	jjc
Copper, total (3050)	M6010B ICP	102	952		*	mg/Kg	1	5	11/15/13 13:03	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.2		*	%	0.1	0.5	11/14/13 5:08	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:38	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 13:48	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:05	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:10	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 8:46	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF6 0-6

ACZ Sample ID: ***L15308-12***
Date Sampled: *10/24/13 15:10*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 13:04	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	11/18/13 23:48	jjc
Copper, total (3050)	M6010B ICP	102	976		*	mg/Kg	1	5	11/15/13 13:06	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.0		*	%	0.1	0.5	11/14/13 6:14	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:41	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 14:07	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:18	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:15	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 9:36	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-13***
Sample ID:	STS-AMD-2013F-WREF7 0-6	Date Sampled:	*10/24/13 15:18*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 13:16	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B		mg/L	0.01	0.05	11/18/13 23:51	jjc
Copper, total (3050)	M6010B ICP	102	900		*	mg/Kg	1	5	11/15/13 13:09	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.3		*	%	0.1	0.5	11/14/13 7:20	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:43	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 14:26	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:30	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:21	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 10:26	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-14***
Sample ID:	STS-AMD-2013F-WREF8 0-6	Date Sampled:	*10/24/13 15:07*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 13:29	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.06			mg/L	0.01	0.05	11/18/13 23:55	jjc
Copper, total (3050)	M6010B ICP	102	742		*	mg/Kg	1	5	11/15/13 13:12	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.7		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	97.0		*	%	0.1	0.5	11/14/13 8:25	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:45	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 14:45	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:43	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:26	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 11:17	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15308-15***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 11:47*
Sample ID:	STS-AMD-2013F-EREF1 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/18/13 13:41	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	3260		*	mg/Kg	20	100	11/15/13 13:21	aeb
Copper (1312)	M6010B ICP	1	0.16			mg/L	0.01	0.05	11/19/13 0:04	jjc
Copper, total (3050)	M6010B ICP	102	1040		*	mg/Kg	1	5	11/15/13 13:21	aeb
Potassium, total (3050)	M6010B ICP	102	2820			mg/Kg	30	200	11/15/13 13:21	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	11/11/13 22:57	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	11/11/13 22:57	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.1		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	11/14/13 9:31	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:48	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 15:04	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:56	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:32	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 12:07	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 10:10	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.2	B		mg/Kg	0.1	0.5	11/22/13 16:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.3	B	*	mg/Kg	0.1	0.5	11/13/13 22:12	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.13	B	*	mg/Kg	0.05	0.3	11/13/13 22:12	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 17:01	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	170	0.063		*	%	0.002	0.009	11/12/13 15:04	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-EREF2 0-6

ACZ Sample ID: ***L15308-16***
Date Sampled: *10/25/13 11:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/11/13 14:54	tcd
Total Hot Plate Digestion	M3010A ICP								11/18/13 13:53	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	2600		*	mg/Kg	20	100	11/15/13 13:24	aeb
Copper (1312)	M6010B ICP	1	0.11			mg/L	0.01	0.05	11/19/13 0:07	jjc
Copper, total (3050)	M6010B ICP	103	978		*	mg/Kg	1	5	11/15/13 13:24	aeb
Potassium, total (3050)	M6010B ICP	103	2830			mg/Kg	30	200	11/15/13 13:24	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	11/12/13 0:05	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	11/12/13 0:05	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	4.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.0		*	%	0.1	0.5	11/14/13 10:37	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:50	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 15:24	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:09	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:38	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 13:48	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 10:24	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.4			mg/Kg	0.1	0.5	11/22/13 16:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.4		*	mg/Kg	0.1	0.5	11/13/13 22:13	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	11/13/13 22:13	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10		U	*	mg/Kg	0.5	5	11/13/13 17:02	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	160	0.081		*	%	0.002	0.008	11/12/13 15:05	tcd

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	*L15308-17*
Sample ID:	STS-AMD-2013F-EREF1 6-12"	Date Sampled:	*10/25/13 12:20*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 11:46	bsu
Total Hot Plate Digestion	M3010A ICP								11/18/13 14:05	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	104	4580		*	mg/Kg	20	100	11/15/13 13:27	aeb
Copper (1312)	M6010B ICP	1	0.17			mg/L	0.01	0.05	11/19/13 0:10	jjc
Copper, total (3050)	M6010B ICP	104	737		*	mg/Kg	1	5	11/15/13 13:27	aeb
Potassium, total (3050)	M6010B ICP	104	3750			mg/Kg	30	200	11/15/13 13:27	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 1:13	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	11/12/13 1:13	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.6		*	%	0.1	0.5	11/14/13 11:42	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:52	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 15:43	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:21	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:43	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 14:38	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 10:39	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.8			mg/Kg	0.1	0.5	11/22/13 16:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.9		*	mg/Kg	0.1	0.5	11/13/13 22:15	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.08	B	*	mg/Kg	0.05	0.3	11/13/13 22:15	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10		U	*	mg/Kg	0.5	5	11/13/13 17:03	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.096		*	%	0.002	0.01	11/19/13 12:46	bsu

Arizona license number: AZ0102

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-EREF2 12-18"

ACZ Sample ID: ***L15308-18***
Date Sampled: *10/25/13 12:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 12:33	bsu
Total Hot Plate Digestion	M3010A ICP								11/18/13 14:17	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	104	4980		*	mg/Kg	20	100	11/15/13 13:31	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/19/13 0:13	jjc
Copper, total (3050)	M6010B ICP	104	677		*	mg/Kg	1	5	11/15/13 13:31	aeb
Potassium, total (3050)	M6010B ICP	104	3550			mg/Kg	30	200	11/15/13 13:31	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	11/12/13 2:21	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	11/12/13 2:21	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	89.0		*	%	0.1	0.5	11/14/13 12:48	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:55	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 16:02	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:34	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:49	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 15:28	spl
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 10:53	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		8.6			mg/Kg	0.1	0.5	11/22/13 16:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	8.6		*	mg/Kg	0.1	0.5	11/13/13 22:18	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	11/13/13 22:18	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	11/13/13 17:06	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	180	0.092		*	%	0.002	0.009	11/19/13 12:48	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-EREF3 0-6
ACZ Sample ID:	***L15308-19***
Date Sampled:	*10/25/13 11:37*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 14:29	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12			mg/L	0.01	0.05	11/19/13 0:16	jjc
Copper, total (3050)	M6010B ICP	103	1720		*	mg/Kg	1	5	11/15/13 13:34	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.0		*	%	0.1	0.5	11/14/13 13:54	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:57	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 16:21	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:47	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 11:54	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 16:19	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15308-20***
Sample ID:	STS-AMD-2013F-EREF4 0-6	Date Sampled:	*10/25/13 11:42*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/18/13 14:42	jjc

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	11/19/13 0:19	jjc
Copper, total (3050)	M6010B ICP	103	777		*	mg/Kg	1	5	11/15/13 13:37	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.1		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.8		*	%	0.1	0.5	11/14/13 15:00	rjv/spl

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/05/13 20:59	spl
Digestion - Hot Plate	M3050B ICP								11/13/13 16:40	cra
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 20:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 12:00	rjv
Synthetic Precip. Leaching Procedure	M1312								11/15/13 17:09	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354936													
WG354936ICV	ICV	11/15/13 11:52	II131111-1	100		99.11	mg/L	99.1	90	110			
WG354936ICB	ICB	11/15/13 11:55				U	mg/L		-0.6	0.6			
WG354769PBS	PBS	11/15/13 12:07				U	mg/Kg		-60	60			
WG354769LCSS	LCSS	11/15/13 12:10	PCN42472	7890		8017	mg/Kg		6500	9290			
WG354769LCSSD	LCSSD	11/15/13 12:13	PCN42472	7890		7023	mg/Kg		6500	9290	13.2	20	
L15308-05MS	MS	11/15/13 12:31	II131029-2	7004.23175	20500	25184	mg/Kg	66.9	75	125			M2
L15308-05MSD	MSD	11/15/13 12:35	II131029-2	7004.23175	20500	24998	mg/Kg	64.2	75	125	0.74	20	M2

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354677													
WG354677PBS	PBS	11/11/13 15:00				U	%		-0.3	0.3			
WG354677LCSS	LCSS	11/11/13 16:08	PCN42350	4.19		4.3	%		80	120			
L15308-05DUP	DUP	11/11/13 18:24			1.7	1.8	%				5.7	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354677													
WG354677PBS	PBS	11/11/13 15:00				U	%		-0.3	0.3			
L15308-05DUP	DUP	11/11/13 18:24			1.2	1.2	%				0	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355054													
WG355054ICV	ICV	11/18/13 22:34	II131111-1	2		1.922	mg/L	96.1	90	110			
WG355054ICB	ICB	11/18/13 22:37				U	mg/L		-0.03	0.03			
WG354907PBS	PBS	11/18/13 22:49				U	mg/L		-0.03	0.03			
WG354907LFB	LFB	11/18/13 22:53	II131029-2	.5		.526	mg/L	105.2	85	115			
L15308-01DUP	DUP	11/18/13 22:59			.14	.147	mg/L				4.9	20	
L15308-02MS	MS	11/18/13 23:05	II131029-2	.5	.61	1.111	mg/L	100.2	75	125			
L15308-02MSD	MSD	11/18/13 23:08	II131029-2	.5	.61	1.176	mg/L	113.2	75	125	5.68	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354936													
WG354936ICV	ICV	11/15/13 11:52	II131111-1	2		1.925	mg/L	96.3	90	110			
WG354936ICB	ICB	11/15/13 11:55				U	mg/L		-0.03	0.03			
WG354769PBS	PBS	11/15/13 12:07				U	mg/Kg		-3	3			
WG354769LCSS	LCSS	11/15/13 12:10	PCN42472	162		163.6	mg/Kg		135	190			
WG354769LCSSD	LCSSD	11/15/13 12:13	PCN42472	162		139.3	mg/Kg		135	190	16	20	
L15308-05MS	MS	11/15/13 12:31	II131029-2	51.5	1010	993.4	mg/Kg	-32.2	75	125			M3
L15308-05MSD	MSD	11/15/13 12:35	II131029-2	51.5	1010	964.2	mg/Kg	-88.9	75	125	2.98	20	M3

Inorganic QC Summary

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15308***

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354834													
WG354834ICV	ICV	11/13/13 20:59	WI131015-1	2.416		2.368	mg/L	98	90	110			
WG354834ICB	ICB	11/13/13 21:00				U	mg/L		-0.06	0.06			
WG354838													
WG354838LFB	LFB	11/13/13 22:04	WI130816-3	2		2.006	mg/Kg	100.3	90	110			
WG354768PBS	PBS	11/13/13 22:05				.16	mg/Kg		-0.3	0.3			
L15308-05DUP	DUP	11/13/13 22:08			.6	.69	mg/Kg				14	20	RA
L15308-18AS	AS	11/13/13 22:19	WI130816-3	10	8.6	17.7	mg/Kg	91	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354834													
WG354834ICV	ICV	11/13/13 20:59	WI131015-1	.609		.626	mg/L	102.8	90	110			
WG354834ICB	ICB	11/13/13 21:00				U	mg/L		-0.03	0.03			
WG354838													
WG354838LFB	LFB	11/13/13 22:04	WI130816-3	1		.988	mg/Kg	98.8	90	110			
WG354768PBS	PBS	11/13/13 22:05				U	mg/Kg		-0.15	0.15			
L15308-05DUP	DUP	11/13/13 22:08			.09	.157	mg/Kg				54.3	20	RA
L15308-18AS	AS	11/13/13 22:19	WI130816-3	5	U	4.43	mg/Kg	88.6	90	110			M2

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354803													
WG354803ICV	ICV	11/13/13 15:23	WI131021-1	1.003		1.009	mg/L	100.6	90	110			
WG354803ICB	ICB	11/13/13 15:27				U	mg/L		-0.15	0.15			
WG354822													
WG354822LFB	LFB	11/13/13 16:53	WI121218-3	1		1.047	mg/Kg	104.7	90	110			
WG354768PBS	PBS	11/13/13 16:54				U	mg/Kg		-0.9	0.9			
L15308-05DUP	DUP	11/13/13 16:56			U	.52	mg/Kg				200	20	RA
L15308-18AS	AS	11/13/13 17:07	WI121218-3	5	U	5.38	mg/Kg	107.6	75	125			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354723													
WG354723ICV	ICV	11/12/13 13:25	WI131021-2	4		4.06	mg/L	101.5	90	110			
WG354723ICB	ICB	11/12/13 13:26				U	mg/L		-0.3	0.3			
WG354667PBS1	PBS	11/12/13 13:27				U	%		-0.006	0.006			
WG354667LFB1	LFB	11/12/13 13:29	WI130930-4	2.5		2.25	%	90	85	115			
WG354723ICV1	ICV	11/12/13 14:41	WI131021-2	4		4.05	mg/L	101.3	90	110			
WG354723ICB1	ICB	11/12/13 14:43				U	mg/L		-0.3	0.3			
WG354667PBS2	PBS	11/12/13 14:48				U	%		-0.3	0.3			
L15306-16MS	MS	11/12/13 14:52	WI130930-4	525	.102	.2083	%	202.5	75	125			M1
L15306-17DUP	DUP	11/12/13 14:54			.095	.141	%				39	20	RD
WG354667LFB2	LFB	11/12/13 15:06	WI130930-4	2.5		2.51	%	100.4	85	115			
WG354975													
WG354975ICV	ICV	11/19/13 12:39	WI131113-4	4		4.18	mg/L	104.5	90	110			
WG354975ICB	ICB	11/19/13 12:40				U	mg/L		-0.3	0.3			
WG354881PBS	PBS	11/19/13 12:41				U	%		-0.006	0.006			
WG354881LFB	LFB	11/19/13 12:45	WI131113-5	2.5		2.51	%	100.4	85	115			
L15308-17MS	MS	11/19/13 12:47	WI131113-5	475	.096	.1491	%	111.8	75	125			
L15308-18DUP	DUP	11/19/13 12:49			.092	.0848	%				8.1	20	

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355186													
WG355186ICV	ICV	11/20/13 12:06	PCN42578	4		3.99	units	99.8	97	103			
L15308-01DUP	DUP	11/20/13 12:11			5	4.96	units				0.8	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354936													
WG354936ICV	ICV	11/15/13 11:52	II131111-1	20		19.65	mg/L	98.3	90	110			
WG354936ICB	ICB	11/15/13 11:55				U	mg/L		-0.9	0.9			
WG354769PBS	PBS	11/15/13 12:07				U	mg/Kg		-90	90			
WG354769LCSS	LCSS	11/15/13 12:10	PCN42472	2600		2637	mg/Kg		1720	3470			
WG354769LCSSD	LCSSD	11/15/13 12:13	PCN42472	2600		2361	mg/Kg		1720	3470	11	20	
L15308-05MS	MS	11/15/13 12:31	II131029-2	10294.37517	3530	14430	mg/Kg	105.9	75	125			
L15308-05MSD	MSD	11/15/13 12:35	II131029-2	10294.37517	3530	14266	mg/Kg	104.3	75	125	1.14	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354828													
WG354828PBS	PBS	11/13/13 16:00				U	%		99.9	100.1			
L15308-01DUP	DUP	11/13/13 18:11			92.8	93.02	%				0.2	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-01	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-02	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-03	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-04	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-05	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-06	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-07	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-08	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L15308-09	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-10	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-11	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-12	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-13	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-14	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-15	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-16	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354723	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-17	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15308-18	WG354936	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L15308-19	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15308-20	WG354936	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15308
Date Received: 10/30/2013 10:10
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2311	12.2	13	Yes
3251	13.5	13	Yes
3403	12	14	Yes
3627	12.3	13	Yes
3721	12.9	13	Yes
3738	11.8	13	Yes
3991	12	15	Yes
4147	11.4	14	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15308
Date Received: 10/30/2013 10:10
Received By: mtb
Date Printed: 10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15308

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-NE5 0-6	10/24/2013 0905	SO	1	x	x	x					
STS-AMD-2013F-NE6 0-6	10/24/2013 0940	SO	1	x	x	x					
STS-AMD-2013F-NE7 0-6	10/24/2013 0935	SO	1	x	x	x					
STS-AMD-2013F-NE8 0-6	10/24/2013 0910	SO	1	x	x	x					
STS-AMD-2013F-WREF1 0-6	10/24/2013 1500	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-WREF2 0-6	10/24/2013 1525	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-WREF1 12-18"	10/24/2013 1545	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-WREF2 12-18'	10/24/2013 1543	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-WREF3 0-6	10/24/2013 1520	SO	1	x	x	x					
STS-AMD-2013F-WREF4 0-6	10/24/2013 1505	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/3pm		
		LR 10-30-13 10:14	

①

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

L15308 Chain of Custody

ACZ Laboratories, Inc. L15308
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS
E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION — **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-WREF5 0-6	10/24/2013 1523	SO	1	x	x	x					
STS-AMD-2013F-WREF6 0-6	10/24/2013 1510	SO	1	x	x	x					
STS-AMD-2013F-WREF7 0-6	10/24/2013 1518	SO	1	x	x	x					
STS-AMD-2013F-WREF8 0-6	10/24/2013 1507	SO	1	x	x	x					
STS-AMD-2013F-EREF1 0-6	10/25/2013 1147	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF2 0-6	10/25/2013 1130	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF1 6-12"	10/25/2013 1220	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF2 12-18"	10/25/2013 1230	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF3 0-6	10/25/2013 1137	SO	1	x	x	x					
STS-AMD-2013F-EREF4 0-6	10/25/2013 1142	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

②

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/ 3pm		
		LPL 10-30-13 10:14	

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 22, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15309

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15309. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15309. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 22, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Freeport-McMoRan - Chino Mines Company

November 22, 2013

Project ID: ZN000001M5
ACZ Project ID: L15309

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 20 soil samples from Freeport-McMoRan - Chino Mines Company on October 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L15309. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The following modifications have been made to the SPLP Copper analysis (N1):

1) The soil to solution ratio was reduced to better simulate soils wetted by rainfall. A ratio of 1:5 soil:solution should be used for chemical analysis.

2) A 0.01 M $CaCl_2$ lixiviant was used instead of deionized water to better simulate the ionic strength of soil solutions (after Sauve et al. 1995); and

3) No adjustment to the initial pH of the soil solution to 5, as is commonly done in the Standard Method 1312 implementation. This step is taken to help ensure that the pH of the soil solution is due to the elements of the solution, not an outside source of acid.

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE5 0-6

ACZ Sample ID: ***L15309-01***
Date Sampled: *10/24/13 09:05*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 10:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	3.56		*	mg/L	0.01	0.05	11/21/13 10:02	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 16:00	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NE6 0-6

ACZ Sample ID: ***L15309-02***
Date Sampled: *10/24/13 09:40*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 10:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.51		*	mg/L	0.01	0.05	11/21/13 10:09	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/14/13 23:52	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-03***
Sample ID:	STS-AMD-2013F-NE7 0-6	Date Sampled:	*10/24/13 09:35*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 11:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.87		*	mg/L	0.01	0.05	11/21/13 10:18	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/15/13 11:40	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-04***
Sample ID:	STS-AMD-2013F-NE8 0-6	Date Sampled:	*10/24/13 09:10*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 11:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.55		*	mg/L	0.01	0.05	11/21/13 10:21	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/15/13 15:36	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF1 0-6

ACZ Sample ID: ***L15309-05***
Date Sampled: *10/24/13 15:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 11:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/21/13 10:24	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/15/13 19:32	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-06***
Sample ID:	STS-AMD-2013F-WREF2 0-6	Date Sampled:	*10/24/13 15:25*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 12:10	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05		*	mg/L	0.01	0.05	11/21/13 10:34	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/15/13 23:29	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-WREF1 12-18"

ACZ Sample ID:	***L15309-07***
Date Sampled:	*10/24/13 15:45*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 12:22	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/21/13 10:37	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/16/13 3:25	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF2 12-18"

ACZ Sample ID: ***L15309-08***
Date Sampled: *10/24/13 15:43*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 12:35	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/21/13 10:40	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/16/13 7:21	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15309-09***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 15:20*
Sample ID:	STS-AMD-2013F-WREF3 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 12:47	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/21/13 10:43	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/16/13 11:17	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-10***
Sample ID:	STS-AMD-2013F-WREF4 0-6	Date Sampled:	*10/24/13 15:05*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 12:59	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B	*	mg/L	0.01	0.05	11/21/13 10:46	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/16/13 15:13	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF5 0-6

ACZ Sample ID: ***L15309-11***
Date Sampled: *10/24/13 15:23*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 13:11	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B	*	mg/L	0.01	0.05	11/21/13 10:49	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/16/13 19:09	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-12***
Sample ID:	STS-AMD-2013F-WREF6 0-6	Date Sampled:	*10/24/13 15:10*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 13:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/21/13 10:53	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/16/13 23:05	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-13***
Sample ID:	STS-AMD-2013F-WREF7 0-6	Date Sampled:	*10/24/13 15:18*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 13:35	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/21/13 10:59	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/17/13 3:02	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-WREF8 0-6

ACZ Sample ID: ***L15309-14***
Date Sampled: *10/24/13 15:07*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 13:47	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B	*	mg/L	0.01	0.05	11/21/13 11:02	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/17/13 6:58	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-EREF1 0-6

ACZ Sample ID: ***L15309-15***
Date Sampled: *10/25/13 11:47*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 13:59	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.18		*	mg/L	0.01	0.05	11/21/13 11:11	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/17/13 10:54	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-EREF2 0-6

ACZ Sample ID: ***L15309-16***
Date Sampled: *10/25/13 11:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 14:11	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	3.59		*	mg/L	0.01	0.05	11/21/13 11:15	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/17/13 14:50	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-17***
Sample ID:	STS-AMD-2013F-EREF1 6-12"	Date Sampled:	*10/25/13 12:20*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 14:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05		*	mg/L	0.01	0.05	11/21/13 11:18	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/17/13 18:46	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-18***
Sample ID:	STS-AMD-2013F-EREF2 12-18"	Date Sampled:	*10/25/13 12:30*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 14:35	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.06		*	mg/L	0.01	0.05	11/21/13 11:21	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/17/13 22:42	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15309-19***
Sample ID:	STS-AMD-2013F-EREF3 0-6	Date Sampled:	*10/25/13 11:37*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 14:47	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12		*	mg/L	0.01	0.05	11/21/13 11:24	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/18/13 2:38	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-EREF4 0-6

ACZ Sample ID: ***L15309-20***
Date Sampled: *10/25/13 11:42*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/20/13 15:00	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.50		*	mg/L	0.01	0.05	11/21/13 11:27	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/18/13 6:34	spl

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15309***

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355228													
WG355228ICV	ICV	11/21/13 9:41	II131111-1	2		1.918	mg/L	95.9	90	110			
WG355228ICB	ICB	11/21/13 9:44				U	mg/L		-0.03	0.03			
WG354908PBS	PBS	11/21/13 9:56				.015	mg/L		-0.03	0.03			
WG354908LFB	LFB	11/21/13 9:59	II131029-2	.5		.503	mg/L	100.6	85	115			
L15309-01DUP	DUP	11/21/13 10:06			3.56	4.545	mg/L				24.3	20	RD
L15309-02MS	MS	11/21/13 10:12	II131029-2	.5	.51	.978	mg/L	93.6	75	125			
L15309-02MSD	MSD	11/21/13 10:15	II131029-2	.5	.51	.981	mg/L	94.2	75	125	0.31	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15309-01	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-02	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-03	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-04	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-05	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-06	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-07	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-08	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15309-09	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-10	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-11	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-12	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-13	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-14	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-15	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-16	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15309-17	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-18	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-19	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15309-20	WG355228	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG354908	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15309***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15309
Date Received: 10/30/2013 10:17
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2311	12.2	13	Yes
3251	13.5	13	Yes
3403	12	14	Yes
3627	12.3	13	Yes
3721	12.9	13	Yes
3738	11.8	13	Yes
3991	12	15	Yes
4147	11.4	14	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15309
Date Received:	10/30/2013 10:17
Received By:	mtb
Date Printed:	10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15309

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L15309 Chain of Custody

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION — **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Patrick Quinn

Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-NE5 0-6	10/24/2013 0905	SO	1	X	X	X					
STS-AMD-2013F-NE6 0-6	10/24/2013 0940	SO	1	X	X	X					
STS-AMD-2013F-NE7 0-6	10/24/2013 0935	SO	1	X	X	X					
STS-AMD-2013F-NE8 0-6	10/24/2013 0910	SO	1	X	X	X					
STS-AMD-2013F-WREF1 0-6	10/24/2013 1500	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-WREF2 0-6	10/24/2013 1525	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-WREF1 12-18"	10/24/2013 1545	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-WREF2 12-18'	10/24/2013 1543	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-WREF3 0-6	10/24/2013 1520	SO	1	X	X	X					
STS-AMD-2013F-WREF4 0-6	10/24/2013 1505	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/3pm		
		10-30-13 10:47	

①

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. C15309

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS
E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-WREF5 0-6	10/24/2013 1523	SO	1	x	x	x					
STS-AMD-2013F-WREF6 0-6	10/24/2013 1510	SO	1	x	x	x					
STS-AMD-2013F-WREF7 0-6	10/24/2013 1518	SO	1	x	x	x					
STS-AMD-2013F-WREF8 0-6	10/24/2013 1507	SO	1	x	x	x					
STS-AMD-2013F-EREF1 0-6	10/25/2013 1147	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF2 0-6	10/25/2013 1130	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF1 6-12"	10/25/2013 1220	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF2 12-18"	10/25/2013 1230	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-EREF3 0-6	10/25/2013 1137	SO	1	x	x	x					
STS-AMD-2013F-EREF4 0-6	10/25/2013 1142	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

COPY

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/3pm		
		10-30-13 10:14	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 14, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15315

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15315. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15315. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 14, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15315-01***
Project ID:	ZN000001M5	Date Sampled:	*10/28/13 15:00*
Sample ID:	RINSATE1	Date Received:	*10/30/13*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS				*				11/08/13 10:30	las

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	1	0.0065			mg/L	0.0005	0.003	11/11/13 23:09	pmc

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15315***

Copper, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354607													
WG354607ICV	ICV	11/11/13 22:43	MS131018-2	.05		.05136	mg/L	102.7	90	110			
WG354607ICB	ICB	11/11/13 22:47				U	mg/L		-0.0015	0.0015			
WG354531LRB	LRB	11/11/13 22:50				U	mg/L		-0.0011	0.0011			
WG354531LFB	LFB	11/11/13 22:53	MS130927-2	.05005		.05297	mg/L	105.8	85	115			
L15315-01LFM	LFM	11/11/13 23:12	MS130927-2	.05005	.0065	.06062	mg/L	108.1	70	130			
L15315-01LFMD	LFMD	11/11/13 23:15	MS130927-2	.05005	.0065	.05857	mg/L	104	70	130	3.44	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15315***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15315-01	WG354531	Total Hot Plate Digestion	M200.2 ICP-MS	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15315***

No certification qualifiers associated with this analysis

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15315
Date Received:	10/30/2013 10:01
Received By:	mtb
Date Printed:	10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?		X	▨

```
The date/time was not present on the sample containers or on
the COC. The "Relinquished By" date was used to enter the
samples.

The sample matrix was entered as SW per the client history.
```

	YES	NO	NA
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?		X	

```
L15315-01 Container B1401879 (RED): Added 2 mls nitric acid to
the sub-sample to adjust the pH to the appropriate range.
```

	YES	NO	NA
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id     Temp (°C)     Rad (µR/Hr)     Custody Seal Intact?
---------     ---------     -----------     --------------------
NA18646       10.4          14              Yes
```

Was ice present in the shipment container(s)?

`No - Wet or gel ice was not present in the shipment container(s).`

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15315
Date Received: 10/30/2013 10:01
Received By: mtb
Date Printed: 10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15315

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.
YES ☒
NO ☐

Are samples for CO DW Compliance Monitoring? If yes, please include state forms. Results will be reported to PQL.
YES ☐
NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Total Copper				
DUP7		SO	1	×	×	×					
DUP8		SO	1	×	×	×					
RINSATE1		W	1				×				
~~RINSATE2~~		~~W~~	~~1~~				~~×~~				
~~RINSATE3~~		~~W~~	~~1~~				~~×~~				
~~RINSATE4~~		~~W~~	~~1~~				~~×~~				

Not Received WPL 10-30-13

COPY

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 / 3PM		
		10/30/13	1001

L15315 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

December 02, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15317

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15317. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15317. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 01, 2014. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Freeport-McMoRan - Chino Mines Company

December 02, 2013

Project ID: ZN000001M5
ACZ Project ID: L15317

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 20 soil samples from Freeport-McMoRan - Chino Mines Company on October 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L15317. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The following modifications have been made to the SPLP Copper analysis (N1):

SPLP analysis performed on < 2000 um sample size.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15317-01***
Sample ID:	STS-AMD-2013F-EREF5 0-6	Date Sampled:	*10/25/13 11:40*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 9:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	11/25/13 18:05	aeb
Copper, total (3050)	M6010B ICP	103	747		*	mg/Kg	1	5	11/20/13 11:38	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	4.4		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.5		*	%	0.1	0.5	11/18/13 14:55	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:45	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 13:07	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:45	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:00	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 17:01	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15317-02***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 11:45*
Sample ID:	STS-AMD-2013F-EREF6 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 9:59	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.08			mg/L	0.01	0.05	11/25/13 18:15	aeb
Copper, total (3050)	M6010B ICP	102	1300		*	mg/Kg	1	5	11/20/13 11:47	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.7		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.7		*	%	0.1	0.5	11/18/13 16:47	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:48	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 16:14	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:52	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:03	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 19:32	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5

Sample ID: STS-AMD-2013F-EREF7 0-6

ACZ Sample ID: ***L15317-03***

Date Sampled: *10/25/13 11:48*

Date Received: *10/30/13*

Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:11	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.10			mg/L	0.01	0.05	11/25/13 18:18	aeb
Copper, total (3050)	M6010B ICP	102	918		*	mg/Kg	1	5	11/20/13 11:50	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.9		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.0		*	%	0.1	0.5	11/18/13 17:42	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:52	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 17:16	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:56	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:06	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 20:23	cra/cdb

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15317-04***
Sample ID:	STS-AMD-2013F-EREF8 0-6	Date Sampled:	*10/25/13 11:53*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09			mg/L	0.01	0.05	11/25/13 18:21	aeb
Copper, total (3050)	M6010B ICP	104	1320		*	mg/Kg	1	5	11/20/13 11:53	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.4		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.5		*	%	0.1	0.5	11/18/13 18:38	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:56	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 18:19	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:09	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 21:13	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF1 0-6

ACZ Sample ID: ***L15317-05***
Date Sampled: *10/25/13 14:50*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 13:20	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	4430		*	mg/Kg	20	100	11/20/13 11:57	aeb
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	11/25/13 18:24	aeb
Copper, total (3050)	M6010B ICP	102	782		*	mg/Kg	1	5	11/20/13 11:57	aeb
Potassium, total (3050)	M6010B ICP	102	2760		*	mg/Kg	30	200	11/20/13 11:57	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/12/13 3:30	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 3:30	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.9		*	%	0.1	0.5	11/18/13 19:34	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:00	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 19:21	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:03	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:12	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 22:03	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 11:07	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.5			mg/Kg	0.1	0.5	11/26/13 13:58	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.6		*	mg/Kg	0.1	0.5	11/13/13 22:21	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.11	B	*	mg/Kg	0.05	0.3	11/13/13 22:21	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 17:08	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	200	0.088		*	%	0.002	0.01	11/19/13 13:08	bsu

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF2 0-6

ACZ Sample ID: ***L15317-06***
Date Sampled: *10/25/13 14:55*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 13:43	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	105	4400		*	mg/Kg	20	100	11/20/13 12:06	aeb
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	11/25/13 18:27	aeb
Copper, total (3050)	M6010B ICP	105	886		*	mg/Kg	1	5	11/20/13 12:06	aeb
Potassium, total (3050)	M6010B ICP	105	3520		*	mg/Kg	30	200	11/20/13 12:06	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 4:38	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	11/12/13 4:38	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.6		*	%	0.1	0.5	11/18/13 20:30	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:04	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 20:24	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:07	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:15	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 22:54	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 11:22	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.5			mg/Kg	0.1	0.5	11/26/13 13:59	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1.6		*	mg/Kg	0.1	0.5	11/13/13 22:22	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.08	B	*	mg/Kg	0.05	0.3	11/13/13 22:22	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 17:09	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	100	0.091		*	%	0.001	0.005	11/19/13 12:53	bsu

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF1 18-24"

ACZ Sample ID: ***L15317-07***
Date Sampled: *10/25/13 15:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 14:06	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	109	37900		*	mg/Kg	20	100	11/20/13 12:09	aeb
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/25/13 18:37	aeb
Copper, total (3050)	M6010B ICP	109	141		*	mg/Kg	1	5	11/20/13 12:09	aeb
Potassium, total (3050)	M6010B ICP	109	4030		*	mg/Kg	30	200	11/20/13 12:09	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	11/12/13 5:46	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	11/12/13 5:46	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.9		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	83.2		*	%	0.1	0.5	11/18/13 21:25	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:08	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 21:26	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:11	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:18	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 0:34	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 11:36	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		2.2			mg/Kg	0.1	0.5	11/26/13 13:59	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	2.5		*	mg/Kg	0.1	0.5	11/13/13 22:23	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.26	B	*	mg/Kg	0.05	0.3	11/13/13 22:23	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	50		U	*	mg/Kg	3	30	11/13/13 17:10	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	120	0.051		*	%	0.001	0.006	11/19/13 12:54	bsu

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF2 12-18"

ACZ Sample ID: ***L15317-08***
Date Sampled: *10/25/13 15:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 14:30	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:10	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	109	15700		*	mg/Kg	20	100	11/20/13 12:13	aeb
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	11/25/13 18:40	aeb
Copper, total (3050)	M6010B ICP	109	180		*	mg/Kg	1	5	11/20/13 12:13	aeb
Potassium, total (3050)	M6010B ICP	109	4810		*	mg/Kg	30	200	11/20/13 12:13	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	11/12/13 6:54	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	11/12/13 6:54	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.4		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	84.0		*	%	0.1	0.5	11/18/13 22:21	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:12	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 22:28	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:15	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:22	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 1:25	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 11:50	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		4.1			mg/Kg	0.1	0.5	11/26/13 13:59	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	4.3		*	mg/Kg	0.1	0.5	11/13/13 22:24	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.19	B	*	mg/Kg	0.05	0.3	11/13/13 22:24	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	11/13/13 17:11	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	120	0.090		*	%	0.001	0.006	11/19/13 12:55	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF3 0-6

ACZ Sample ID: ***L15317-09***
Date Sampled: *10/25/13 14:46*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:22	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.30			mg/L	0.01	0.05	11/25/13 18:46	aeb
Copper, total (3050)	M6010B ICP	102	960		*	mg/Kg	1	5	11/20/13 12:16	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.4		*	%	0.1	0.5	11/18/13 23:17	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:16	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 23:31	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:18	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:25	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 2:15	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF4 0-6

ACZ Sample ID: ***L15317-10***
Date Sampled: *10/25/13 15:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/25/13 18:49	aeb
Copper, total (3050)	M6010B ICP	102	244		*	mg/Kg	1	5	11/20/13 12:19	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.4		*	%	0.1	0.5	11/19/13 0:12	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:20	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 0:33	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:22	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:28	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 3:05	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF5 0-6

ACZ Sample ID: ***L15317-11***
Date Sampled: *10/25/13 14:41*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.12			mg/L	0.01	0.05	11/25/13 18:52	aeb
Copper, total (3050)	M6010B ICP	102	1020		*	mg/Kg	1	5	11/20/13 12:22	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	96.8		*	%	0.1	0.5	11/19/13 1:08	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:24	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 1:36	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:26	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:31	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 3:56	cra/cdb

Arizona license number: AZ0102

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15317-12***
Sample ID:	STS-AMD-2013F-NREF6 0-6	Date Sampled:	*10/25/13 14:37*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	11/25/13 18:56	aeb
Copper, total (3050)	M6010B ICP	103	682		*	mg/Kg	1	5	11/20/13 12:25	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.8		*	%	0.1	0.5	11/19/13 2:04	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:28	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 2:38	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:30	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:34	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 4:46	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15317-13***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 14:47*
Sample ID:	STS-AMD-2013F-NREF7 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:09	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.06			mg/L	0.01	0.05	11/25/13 18:59	aeb
Copper, total (3050)	M6010B ICP	103	761		*	mg/Kg	1	5	11/20/13 12:29	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.3		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.2		*	%	0.1	0.5	11/19/13 3:00	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:32	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 3:40	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:33	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:37	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 5:36	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15317-14***
Sample ID:	STS-AMD-2013F-NREF8 0-6	Date Sampled:	*10/25/13 14:52*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	11/25/13 19:02	aeb
Copper, total (3050)	M6010B ICP	104	744		*	mg/Kg	1	5	11/20/13 12:32	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.9		*	%	0.1	0.5	11/19/13 3:55	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:36	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 4:43	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:37	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:40	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 6:26	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF1 0-6

ACZ Sample ID: ***L15317-15***
Date Sampled: *10/23/13 16:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 14:53	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:33	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	108	5550		*	mg/Kg	20	100	11/20/13 12:44	aeb
Copper (1312)	M6010B ICP	1	0.16			mg/L	0.01	0.05	11/25/13 19:05	aeb
Copper, total (3050)	M6010B ICP	108	1040		*	mg/Kg	1	5	11/20/13 12:44	aeb
Potassium, total (3050)	M6010B ICP	108	3760		*	mg/Kg	30	200	11/20/13 12:44	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.3		*	%	0.1	0.5	11/12/13 8:02	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/12/13 8:02	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.3		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.4		*	%	0.1	0.5	11/19/13 4:51	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:40	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 5:45	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:41	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:44	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 7:17	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 12:04	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.0			mg/Kg	0.1	0.5	11/26/13 14:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1.1		*	mg/Kg	0.1	0.5	11/13/13 22:25	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.08	B	*	mg/Kg	0.05	0.3	11/13/13 22:25	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	0.8	B	*	mg/Kg	0.3	3	11/13/13 17:23	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	90	0.1092		*	%	0.0009	0.005	11/19/13 12:58	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15317-16***
Sample ID:	STS-AMD-2013F-NEREF2 0-6	Date Sampled:	*10/23/13 16:15*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 15:16	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:45	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	105	2830		*	mg/Kg	20	100	11/20/13 12:47	aeb
Copper (1312)	M6010B ICP	1	0.41			mg/L	0.01	0.05	11/25/13 19:14	aeb
Copper, total (3050)	M6010B ICP	105	1950		*	mg/Kg	1	5	11/20/13 12:47	aeb
Potassium, total (3050)	M6010B ICP	105	3580		*	mg/Kg	30	200	11/20/13 12:47	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/12/13 9:10	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/12/13 9:10	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	4.4		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.1		*	%	0.1	0.5	11/19/13 5:47	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:44	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 6:48	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:45	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:47	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 8:07	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 12:19	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		5.9			mg/Kg	0.1	0.5	11/26/13 14:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	6		*	mg/Kg	0.1	0.5	11/13/13 22:27	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.09	B	*	mg/Kg	0.05	0.3	11/13/13 22:27	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	1.2	B	*	mg/Kg	0.3	3	11/13/13 17:14	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	210	0.108		*	%	0.002	0.01	11/19/13 12:59	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF1 12-18"

ACZ Sample ID: ***L15317-17***
Date Sampled: *10/23/13 17:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 15:40	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:57	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	106	6090		*	mg/Kg	20	100	11/20/13 12:51	aeb
Copper (1312)	M6010B ICP	1	0.05			mg/L	0.01	0.05	11/25/13 19:18	aeb
Copper, total (3050)	M6010B ICP	106	777		*	mg/Kg	1	5	11/20/13 12:51	aeb
Potassium, total (3050)	M6010B ICP	106	3330		*	mg/Kg	30	200	11/20/13 12:51	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/12/13 10:19	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	11/12/13 10:19	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	90.3		*	%	0.1	0.5	11/19/13 6:42	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:48	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 7:50	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:48	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:50	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 9:48	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 12:33	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		3.1			mg/Kg	0.1	0.5	11/26/13 14:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	3.1		*	mg/Kg	0.1	0.5	11/13/13 22:28	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	11/13/13 22:28	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	1.1	B	*	mg/Kg	0.3	3	11/13/13 17:15	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	110	0.093		*	%	0.001	0.006	11/19/13 13:00	bsu

Arizona license number: AZ0102

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF2 12-18"

ACZ Sample ID: ***L15317-18***
Date Sampled: *10/23/13 17:50*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 16:03	bsu
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:09	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	107	4150		*	mg/Kg	20	100	11/20/13 12:54	aeb
Copper (1312)	M6010B ICP	1	0.06			mg/L	0.01	0.05	11/25/13 19:21	aeb
Copper, total (3050)	M6010B ICP	107	776		*	mg/Kg	1	5	11/20/13 12:54	aeb
Potassium, total (3050)	M6010B ICP	107	3320		*	mg/Kg	30	200	11/20/13 12:54	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	11/12/13 11:27	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1		*	%	0.1	0.5	11/12/13 11:27	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	4.9		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	89.1		*	%	0.1	0.5	11/19/13 7:38	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:52	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 8:52	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:52	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:53	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 10:38	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 12:47	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		1.6			mg/Kg	0.1	0.5	11/26/13 14:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1.6		*	mg/Kg	0.1	0.5	11/13/13 22:29	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	11/13/13 22:29	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	0.6	B	*	mg/Kg	0.5	5	11/13/13 17:16	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	160	0.097		*	%	0.002	0.008	11/19/13 13:02	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15317-19***
Project ID:	ZN000001M5	Date Sampled:	*10/23/13 18:00*
Sample ID:	STS-AMD-2013F-NEREF3 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.61			mg/L	0.01	0.05	11/25/13 19:24	aeb
Copper, total (3050)	M6010B ICP	106	2340		*	mg/Kg	1	5	11/20/13 12:57	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	4.6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.2		*	%	0.1	0.5	11/19/13 8:34	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:56	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 9:55	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:56	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:56	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 11:28	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF4 0-6

ACZ Sample ID: ***L15317-20***
Date Sampled: *10/23/13 16:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:32	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.28			mg/L	0.01	0.05	11/25/13 19:27	aeb
Copper, total (3050)	M6010B ICP	104	1840		*	mg/Kg	1	5	11/20/13 13:00	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	4.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	93.6		*	%	0.1	0.5	11/19/13 9:30	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 19:00	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 10:57	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 20:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 17:59	rjv
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 12:19	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355147													
WG355147ICV	ICV	11/20/13 11:13	II131111-1	100		99.83	mg/L	99.8	90	110			
WG355147ICB	ICB	11/20/13 11:16				U	mg/L		-0.6	0.6			
WG355010PBS	PBS	11/20/13 11:29				U	mg/Kg		-60	60			
WG355010LCSS	LCSS	11/20/13 11:32	PCN42472	7890		7171	mg/Kg		6500	9290			
WG355010LCSSD	LCSSD	11/20/13 11:35	PCN42472	7890		7422	mg/Kg		6500	9290	3.4	20	
L15317-01MS	MS	11/20/13 11:41	II131029-2	7004.23175	2050	8524	mg/Kg	92.4	75	125			
L15317-01MSD	MSD	11/20/13 11:44	II131029-2	7004.23175	2050	8481	mg/Kg	91.8	75	125	0.51	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354677													
WG354677PBS	PBS	11/11/13 15:00				U	%		-0.3	0.3			
WG354677LCSS	LCSS	11/11/13 16:08	PCN42350	4.19		4.3	%		80	120			
L15308-05DUP	DUP	11/11/13 18:24			1.7	1.8	%				5.7	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354677													
WG354677PBS	PBS	11/11/13 15:00				U	%		-0.3	0.3			
L15308-05DUP	DUP	11/11/13 18:24			1.2	1.2	%				0	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355458													
WG355458ICV	ICV	11/25/13 17:44	II131111-1	2		1.928	mg/L	96.4	90	110			
WG355458ICB	ICB	11/25/13 17:47				U	mg/L		-0.03	0.03			
WG355170PBS	PBS	11/25/13 17:59				U	mg/L		-0.03	0.03			
WG355170LFB	LFB	11/25/13 18:02	II131029-2	.5		.506	mg/L	101.2	85	115			
L15317-01MS	MS	11/25/13 18:09	II131029-2	.5	.09	.598	mg/L	101.6	75	125			
L15317-01MSD	MSD	11/25/13 18:12	II131029-2	.5	.09	.6	mg/L	102	75	125	0.33	20	
L15317-20DUP	DUP	11/25/13 19:30			.28	.311	mg/L				10.5	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355147													
WG355147ICV	ICV	11/20/13 11:13	II131111-1	2		1.93	mg/L	96.5	90	110			
WG355147ICB	ICB	11/20/13 11:16				U	mg/L		-0.03	0.03			
WG355010PBS	PBS	11/20/13 11:29				U	mg/Kg		-3	3			
WG355010LCSS	LCSS	11/20/13 11:32	PCN42472	162		141.5	mg/Kg		135	190			
WG355010LCSSD	LCSSD	11/20/13 11:35	PCN42472	162		146.5	mg/Kg		135	190	3.5	20	
L15317-01MS	MS	11/20/13 11:41	II131029-2	51.5	747	795.2	mg/Kg	93.6	75	125			
L15317-01MSD	MSD	11/20/13 11:44	II131029-2	51.5	747	786.8	mg/Kg	77.3	75	125	1.06	20	

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354834													
WG354834ICV	ICV	11/13/13 20:59	WI131015-1	2.416		2.368	mg/L	98	90	110			
WG354834ICB	ICB	11/13/13 21:00				U	mg/L		-0.06	0.06			
WG354838													
WG354838LFB	LFB	11/13/13 22:04	WI130816-3	2		2.006	mg/Kg	100.3	90	110			
WG354768PBS	PBS	11/13/13 22:05				.16	mg/Kg		-0.3	0.3			
L15308-05DUP	DUP	11/13/13 22:08			.6	.69	mg/Kg				14	20	RA
L15308-18AS	AS	11/13/13 22:19	WI130816-3	10	8.6	17.7	mg/Kg	91	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354834													
WG354834ICV	ICV	11/13/13 20:59	WI131015-1	.609		.626	mg/L	102.8	90	110			
WG354834ICB	ICB	11/13/13 21:00				U	mg/L		-0.03	0.03			
WG354838													
WG354838LFB	LFB	11/13/13 22:04	WI130816-3	1		.988	mg/Kg	98.8	90	110			
WG354768PBS	PBS	11/13/13 22:05				U	mg/Kg		-0.15	0.15			
L15308-05DUP	DUP	11/13/13 22:08			.09	.157	mg/Kg				54.3	20	RA
L15308-18AS	AS	11/13/13 22:19	WI130816-3	5	U	4.43	mg/Kg	88.6	90	110			M2

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354803													
WG354803ICV	ICV	11/13/13 15:23	WI131021-1	1.003		1.009	mg/L	100.6	90	110			
WG354803ICB	ICB	11/13/13 15:27				U	mg/L		-0.15	0.15			
WG354822													
WG354822LFB	LFB	11/13/13 16:53	WI121218-3	1		1.047	mg/Kg	104.7	90	110			
WG354768PBS	PBS	11/13/13 16:54				U	mg/Kg		-0.9	0.9			
L15308-05DUP	DUP	11/13/13 16:56			U	.52	mg/Kg				200	20	RA
L15308-18AS	AS	11/13/13 17:07	WI121218-3	5	U	5.38	mg/Kg	107.6	75	125			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354975													
WG354975ICV	ICV	11/19/13 12:39	WI131113-4	4		4.18	mg/L	104.5	90	110			
WG354975ICB	ICB	11/19/13 12:40				U	mg/L		-0.3	0.3			
WG354881PBS	PBS	11/19/13 12:41				U	%		-0.006	0.006			
WG354881LFB	LFB	11/19/13 12:45	WI131113-5	2.5		2.51	%	100.4	85	115			
L15308-17MS	MS	11/19/13 12:47	WI131113-5	475	.096	.1491	%	111.8	75	125			
L15308-18DUP	DUP	11/19/13 12:49			.092	.0848	%				8.1	20	

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355187													
WG355187ICV	ICV	11/20/13 12:06	PCN42578	4		3.98	units	99.5	97	103			
L15317-01DUP	DUP	11/20/13 12:11			4.4	4.47	units				1.6	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355147													
WG355147ICV	ICV	11/20/13 11:13	II131111-1	20		19.88	mg/L	99.4	90	110			
WG355147ICB	ICB	11/20/13 11:16				U	mg/L		-0.9	0.9			
WG355010PBS	PBS	11/20/13 11:29				U	mg/Kg		-90	90			
WG355010LCSS	LCSS	11/20/13 11:32	PCN42472	2600		2625	mg/Kg		1720	3470			
WG355010LCSSD	LCSSD	11/20/13 11:35	PCN42472	2600		2734	mg/Kg		1720	3470	4.1	20	
L15317-01MS	MS	11/20/13 11:41	II131029-2	10294.37517	3110	12978	mg/Kg	95.9	75	125			
L15317-01MSD	MSD	11/20/13 11:44	II131029-2	10294.37517	3110	12885	mg/Kg	95	75	125	0.72	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355025													
WG355025PBS	PBS	11/18/13 14:00				U	%		99.9	100.1			
L15317-01DUP	DUP	11/18/13 15:51			94.5	94.21	%				0.3	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15317***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-01	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-02	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-03	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-04	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-05	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-06	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-07	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-08	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L15317-09	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-10	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-11	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-12	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-13	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-14	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15317***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-15	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-16	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-17	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15317-18	WG355147	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L15317-19	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15317-20	WG355147	Copper, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG355170	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15317
Date Received:	10/30/2013 10:01
Received By:	mtb
Date Printed:	10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2983	12.4	15	Yes
3041	13	14	Yes
3251	13.5	13	Yes
3627	12.3	13	Yes
3738	11.8	13	Yes
3783	11.5	14	Yes
NA18646	10.4	14	Yes

Was ice present in the shipment container(s)?

`No - Wet or gel ice was not present in the shipment container(s).`

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15317
Date Received: 10/30/2013 10:01
Received By: mtb
Date Printed: 10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15317

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-EREF5 0-6	10/25/2013 1140	SO	1	x	x	x					
STS-AMD-2013F-EREF6 0-6	10/25/2013 1145	SO	1	x	x	x					
STS-AMD-2013F-EREF7 0-6	10/25/2013 1148	SO	1	x	x	x					
STS-AMD-2013F-EREF8 0-6	10/25/2013 1153	SO	1	x	x	x					
STS-AMD-2013F-NREF1 0-6	10/25/2013 1450	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF2 0-6	10/25/2013 1455	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF1 18-24"	10/25/2013 1530	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF2 12-18"	10/25/2013 1535	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF3 0-6	10/25/2013 1446	SO	1	x	x	x					
STS-AMD-2013F-NREF4 0-6	10/25/2013 1500	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

(1)

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/3pm		
		10-30-13 10:00	

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L15317

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-NREF5 0-6	10/25/2013 1441	SO	1	x	x	x					
STS-AMD-2013F-NREF6 0-6	10/25/2013 1437	SO	1	x	x	x					
STS-AMD-2013F-NREF7 0-6	10/25/2013 1447	SO	1	x	x	x					
STS-AMD-2013F-NREF8 0-6	10/25/2013 1452	SO	1	x	x	x					
STS-AMD-2013F-NEREF1 0-6	10/23/2013 1635	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NEREF2 0-6	10/23/2013 1615	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NEREF1 12-18"	10/23/2013 1730	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NEREF2 12-18"	10/23/2013 1750	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NEREF3 0-6	10/23/2013 1800	SO	1	x	x	x					
STS-AMD-2013F-NEREF4 0-6	10/23/2013 1630	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

②

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/3pm		

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 02, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15318

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15318. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15318. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 01, 2014. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Case Narrative

Freeport-McMoRan - Chino Mines Company

November 27, 2013

Project ID: ZN000001M5
ACZ Project ID: L15318

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 20 soil samples from Freeport-McMoRan - Chino Mines Company on October 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L15318. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The following modifications have been made to the SPLP Copper analysis (N1):

1) The soil to solution ratio was reduced to better simulate soils wetted by rainfall. A ratio of 1:5 soil:solution should be used for chemical analysis.

2) A 0.01 M $CaCl_2$ lixiviant was used instead of deionized water to better simulate the ionic strength of soil solutions (afterSauve et al. 1995); and

3) No adjustment to the initial pH of the soil solution to 5, as is commonly done in the Standard Method 1312 implementation. This step is taken to help ensure that the pH of the soil solution is due to the elements of the solution, not an outside source of acid.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15318-01***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 11:40*
Sample ID:	STS-AMD-2013F-EREF5 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 9:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	4.26		*	mg/L	0.01	0.05	11/25/13 20:15	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 20:02	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15318-02***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 11:45*
Sample ID:	STS-AMD-2013F-EREF6 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 9:59	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07		*	mg/L	0.01	0.05	11/25/13 20:24	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/20/13 22:26	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-EREF7 0-6

ACZ Sample ID:	***L15318-03***
Date Sampled:	*10/25/13 11:48*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.11		*	mg/L	0.01	0.05	11/25/13 20:31	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 0:01	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-04***
Sample ID:	STS-AMD-2013F-EREF8 0-6	Date Sampled:	*10/25/13 11:53*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.09		*	mg/L	0.01	0.05	11/25/13 20:34	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 0:49	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15318-05***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 14:50*
Sample ID:	STS-AMD-2013F-NREF1 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.16		*	mg/L	0.01	0.05	11/25/13 20:37	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 1:37	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15318-06***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 14:55*
Sample ID:	STS-AMD-2013F-NREF2 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 10:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.18		*	mg/L	0.01	0.05	11/25/13 20:46	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 3:13	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF1 18-24"

ACZ Sample ID: ***L15318-07***
Date Sampled: *10/25/13 15:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:10	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.01	B	*	mg/L	0.01	0.05	11/25/13 20:49	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 4:01	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-08***
Sample ID:	STS-AMD-2013F-NREF2 12-18"	Date Sampled:	*10/25/13 15:35*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:22	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.01	B	*	mg/L	0.01	0.05	11/25/13 20:52	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 4:49	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15318-09***
Project ID:	ZN000001M5	Date Sampled:	*10/25/13 14:46*
Sample ID:	STS-AMD-2013F-NREF3 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:34	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.17		*	mg/L	0.01	0.05	11/25/13 20:56	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 5:37	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NREF4 0-6

ACZ Sample ID: ***L15318-10***
Date Sampled: *10/25/13 15:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.04	B	*	mg/L	0.01	0.05	11/25/13 20:59	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 6:25	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-11***
Sample ID:	STS-AMD-2013F-NREF5 0-6	Date Sampled:	*10/25/13 14:41*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 11:58	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.54		*	mg/L	0.01	0.05	11/25/13 21:02	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 7:13	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-12***
Sample ID:	STS-AMD-2013F-NREF6 0-6	Date Sampled:	*10/25/13 14:37*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:09	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.30		*	mg/L	0.01	0.05	11/25/13 21:05	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 8:00	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-13***
Sample ID:	STS-AMD-2013F-NREF7 0-6	Date Sampled:	*10/25/13 14:47*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.04		*	mg/L	0.01	0.05	11/25/13 21:08	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 8:48	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-14***
Sample ID:	STS-AMD-2013F-NREF8 0-6	Date Sampled:	*10/25/13 14:52*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:33	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.70		*	mg/L	0.01	0.05	11/25/13 21:11	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 9:36	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF1 0-6

ACZ Sample ID: ***L15318-15***
Date Sampled: *10/23/13 16:35*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:45	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	4.20		*	mg/L	0.01	0.05	11/25/13 21:14	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 10:24	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-16***
Sample ID:	STS-AMD-2013F-NEREF2 0-6	Date Sampled:	*10/23/13 16:15*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 12:57	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	35.70		*	mg/L	0.01	0.05	11/25/13 21:24	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 12:00	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF1 12-18"

ACZ Sample ID: ***L15318-17***
Date Sampled: *10/23/13 17:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:09	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.08		*	mg/L	0.01	0.05	11/25/13 21:30	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 12:48	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15318-18***
Sample ID:	STS-AMD-2013F-NEREF2 12-18"	Date Sampled:	*10/23/13 17:50*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	2.90		*	mg/L	0.01	0.05	11/25/13 21:33	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 13:36	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15318-19***
Project ID:	ZN000001M5	Date Sampled:	*10/23/13 18:00*
Sample ID:	STS-AMD-2013F-NEREF3 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:32	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	14.40		*	mg/L	0.01	0.05	11/25/13 21:36	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 14:24	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2013F-NEREF4 0-6

ACZ Sample ID: ***L15318-20***
Date Sampled: *10/23/13 16:30*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/25/13 13:44	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	7.96		*	mg/L	0.01	0.05	11/25/13 21:39	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/21/13 15:12	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.

(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.

(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.

(4) EPA SW-846. Test Methods for Evaluating Solid Waste.

(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.

(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15318***

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355459													
WG355459ICV	ICV	11/25/13 19:53	II131111-1	2		1.935	mg/L	96.8	90	110			
WG355459ICB	ICB	11/25/13 19:56				U	mg/L		-0.03	0.03			
WG355207PBS	PBS	11/25/13 20:09				U	mg/L		-0.03	0.03			
WG355207LFB	LFB	11/25/13 20:12	II131029-2	.5		.515	mg/L	103	85	115			
L15318-01MS	MS	11/25/13 20:18	II131029-2	.5	4.26	4.755	mg/L	99	75	125			
L15318-01MSD	MSD	11/25/13 20:21	II131029-2	.5	4.26	4.823	mg/L	112.6	75	125	1.42	20	
L15318-02DUP	DUP	11/25/13 20:27			.07	.071	mg/L				1.4	20	RA

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15318-01	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-02	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-03	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-04	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-05	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-06	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-07	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-08	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-09	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-10	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-11	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-12	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-13	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15318-14	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-15	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-16	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-17	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-18	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-19	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15318-20	WG355459	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG355207	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15318
Date Received: 10/30/2013 10:01
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2983	12.4	15	Yes
3041	13	14	Yes
3251	13.5	13	Yes
3627	12.3	13	Yes
3738	11.8	13	Yes
3783	11.5	14	Yes
NA18646	10.4	14	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15318
Date Received: 10/30/2013 10:01
Received By: mtb
Date Printed: 10/30/2013

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15318

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L15318 Chain of Custody

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-EREF5 0-6	10/25/2013 1140	SO	1	x	x	x					
STS-AMD-2013F-EREF6 0-6	10/25/2013 1145	SO	1	x	x	x					
STS-AMD-2013F-EREF7 0-6	10/25/2013 1148	SO	1	x	x	x					
STS-AMD-2013F-EREF8 0-6	10/25/2013 1153	SO	1	x	x	x					
STS-AMD-2013F-NREF1 0-6	10/25/2013 1450	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF2 0-6	10/25/2013 1455	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF1 18-24"	10/25/2013 1530	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF2 12-18"	10/25/2013 1535	SO	1	x	x	x	x	x	x	x	
STS-AMD-2013F-NREF3 0-6	10/25/2013 1446	SO	1	x	x	x					
STS-AMD-2013F-NREF4 0-6	10/25/2013 1500	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

①

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 / 3pm		
		LRL 10-30-13 10:00	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L15318

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson

Company: Chino Mines Company

E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023

Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley

Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com

Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson

Company: Chino Mines Company

E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023

Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Patrick Quinn

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-NREF5 0-6	10/25/2013 1441	SO	1	X	X	X					
STS-AMD-2013F-NREF6 0-6	10/25/2013 1437	SO	1	X	X	X					
STS-AMD-2013F-NREF7 0-6	10/25/2013 1447	SO	1	X	X	X					
STS-AMD-2013F-NREF8 0-6	10/25/2013 1452	SO	1	X	X	X					
STS-AMD-2013F-NEREF1 0-6	10/23/2013 1635	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NEREF2 0-6	10/23/2013 1615	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NEREF1 12-18"	10/23/2013 1730	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NEREF2 12-18"	10/23/2013 1750	SO	1	X	X	X	X	X	X	X	
STS-AMD-2013F-NEREF3 0-6	10/23/2013 1800	SO	1	X	X	X					
STS-AMD-2013F-NEREF4 0-6	10/23/2013 1630	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

2

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/3pm		
		LRC 10-30-13 10:00	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 25, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15319

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15319. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15319. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 25, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15319-01***
Project ID:	ZN000001M5	Date Sampled:	*10/23/13 16:45*
Sample ID:	STS-AMD-2013F-NEREF5 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 10:16	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.18			mg/L	0.01	0.05	11/08/13 23:07	aeb
Copper, total (3050)	M6010B ICP	104	3400		*	mg/Kg	1	5	11/20/13 13:49	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.8		*	%	0.1	0.5	11/18/13 18:16	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:45	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 14:47	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:45	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:20	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 21:46	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-02***
Sample ID:	STS-AMD-2013F-NEREF6 0-6	Date Sampled:	*10/23/13 16:40*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 10:52	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.34			mg/L	0.01	0.05	11/08/13 23:13	aeb
Copper, total (3050)	M6010B ICP	104	2010		*	mg/Kg	1	5	11/20/13 13:58	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.5		*	%	0.1	0.5	11/18/13 20:50	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:51	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 19:20	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 18:57	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:23	spl
Synthetic Precip. Leaching Procedure	M1312								11/06/13 23:51	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-NEREF7 0-6
ACZ Sample ID:	***L15319-03***
Date Sampled:	*10/23/13 16:50*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 11:46	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.15			mg/L	0.01	0.05	11/08/13 23:22	aeb
Copper, total (3050)	M6010B ICP	104	1560		*	mg/Kg	1	5	11/20/13 14:01	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.9		*	%	0.1	0.5	11/18/13 22:07	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 17:58	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 20:51	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:03	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:27	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 3:00	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15319-04***
Project ID:	ZN000001M5	Date Sampled:	*10/23/13 16:25*
Sample ID:	STS-AMD-2013F-NEREF8 0-6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 12:05	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.25			mg/L	0.01	0.05	11/08/13 23:26	aeb
Copper, total (3050)	M6010B ICP	104	2040		*	mg/Kg	1	5	11/20/13 14:04	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	91.5		*	%	0.1	0.5	11/18/13 23:24	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:05	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 22:22	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:10	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:30	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 4:02	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-05***
Sample ID:	DUP1	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 16:26	bsu
Total Hot Plate Digestion	M3010A ICP								11/08/13 12:23	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	105	6280		*	mg/Kg	20	100	11/20/13 14:07	aeb
Copper (1312)	M6010B ICP	1	0.17			mg/L	0.01	0.05	11/08/13 23:29	aeb
Copper, total (3050)	M6010B ICP	105	1580		*	mg/Kg	1	5	11/20/13 14:07	aeb
Potassium, total (3050)	M6010B ICP	105	3640			mg/Kg	30	200	11/20/13 14:07	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	11/12/13 12:35	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	11/12/13 12:35	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	5.4		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.0		*	%	0.1	0.5	11/19/13 0:41	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:12	spl
Digestion - Hot Plate	M3050B ICP								11/18/13 23:52	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:16	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:34	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 5:05	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 13:02	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		13			mg/Kg	0.1	0.5	11/25/13 14:48	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	13.4		*	mg/Kg	0.1	0.5	11/13/13 22:32	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5		U	*	mg/Kg	0.05	0.3	11/13/13 22:32	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	2.7	B	*	mg/Kg	0.3	3	11/13/13 17:19	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	90	0.1433		*	%	0.0009	0.005	11/19/13 13:03	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-06***
Sample ID:	DUP2	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 16:50	bsu
Total Hot Plate Digestion	M3010A ICP								11/08/13 12:41	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	505	125000			mg/Kg	100	500	11/20/13 15:58	aeb
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	11/08/13 23:38	aeb
Copper, total (3050)	M6010B ICP	101	101		*	mg/Kg	1	5	11/20/13 14:17	aeb
Potassium, total (3050)	M6010B ICP	101	2110			mg/Kg	30	200	11/20/13 14:17	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	4.3		*	%	0.1	0.5	11/12/13 13:43	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	11/12/13 13:43	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.4		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.8		*	%	0.1	0.5	11/19/13 1:58	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:19	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 1:23	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:22	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:38	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 7:11	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 13:16	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.9			mg/Kg	0.1	0.5	11/25/13 14:48	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	1		*	mg/Kg	0.1	0.5	11/13/13 22:34	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.08	B	*	mg/Kg	0.05	0.3	11/13/13 22:34	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5		U	*	mg/Kg	0.3	3	11/13/13 17:20	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	160	0.045		*	%	0.002	0.008	11/19/13 13:04	bsu

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-07***
Sample ID:	DUP3	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 17:13	bsu
Total Hot Plate Digestion	M3010A ICP								11/08/13 12:59	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	102	25300		*	mg/Kg	20	100	11/20/13 14:23	aeb
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	11/08/13 23:41	aeb
Copper, total (3050)	M6010B ICP	102	677		*	mg/Kg	1	5	11/20/13 14:23	aeb
Potassium, total (3050)	M6010B ICP	102	3460			mg/Kg	30	200	11/20/13 14:23	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2		*	%	0.1	0.5	11/12/13 14:51	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.2		*	%	0.1	0.5	11/12/13 14:51	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.6		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	94.7		*	%	0.1	0.5	11/19/13 3:15	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:25	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 2:54	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:28	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:41	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 8:13	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 13:30	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.3	B		mg/Kg	0.1	0.5	11/25/13 14:49	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.4	B	*	mg/Kg	0.1	0.5	11/13/13 22:35	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.14	B	*	mg/Kg	0.05	0.3	11/13/13 22:35	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	10	0.6	B	*	mg/Kg	0.5	5	11/13/13 17:21	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	110	0.110		*	%	0.001	0.006	11/19/13 13:05	bsu

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP4

ACZ Sample ID: ***L15319-08***
Date Sampled: *10/24/13 15:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor				*				11/14/13 17:36	bsu
Total Hot Plate Digestion	M3010A ICP								11/08/13 13:17	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	103	8730		*	mg/Kg	20	100	11/20/13 14:26	aeb
Copper (1312)	M6010B ICP	1	0.04	B		mg/L	0.01	0.05	11/08/13 23:45	aeb
Copper, total (3050)	M6010B ICP	103	396		*	mg/Kg	1	5	11/20/13 14:26	aeb
Potassium, total (3050)	M6010B ICP	103	2530			mg/Kg	30	200	11/20/13 14:26	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	11/12/13 16:00	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	11/12/13 16:00	cra
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.9		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	92.8		*	%	0.1	0.5	11/19/13 4:32	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:32	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 4:25	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:35	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:45	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 9:16	cra/cdb
Water Extraction	ASA No. 9 10-2.3.2				*				11/13/13 13:44	rjv

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		0.7			mg/Kg	0.1	0.5	11/25/13 14:49	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.8		*	mg/Kg	0.1	0.5	11/13/13 22:36	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5	0.07	B	*	mg/Kg	0.05	0.3	11/13/13 22:36	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	25		U	*	mg/Kg	1	10	11/13/13 17:22	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	160	0.087		*	%	0.002	0.008	11/19/13 13:06	bsu

Arizona license number: AZ0102

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-09***
Sample ID:	DUP5	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 13:35	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/08/13 23:48	aeb
Copper, total (3050)	M6010B ICP	106	419		*	mg/Kg	1	5	11/20/13 14:29	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.2		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	88.5		*	%	0.1	0.5	11/19/13 5:49	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:39	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 5:56	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:41	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:49	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 10:19	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-10***
Sample ID:	DUP6	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 13:53	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.01	B		mg/L	0.01	0.05	11/08/13 23:54	aeb
Copper, total (3050)	M6010B ICP	107	116		*	mg/Kg	1	5	11/20/13 14:32	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.5		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	86.0		*	%	0.1	0.5	11/19/13 7:06	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:46	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 7:27	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:47	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:52	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 11:21	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	DUP7

ACZ Sample ID:	***L15319-11***
Date Sampled:	*10/24/13 15:00*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 14:12	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1		U		mg/L	0.01	0.05	11/08/13 23:57	aeb
Copper, total (3050)	M6010B ICP	105	91		*	mg/Kg	1	5	11/20/13 14:36	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	7.3		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	84.3		*	%	0.1	0.5	11/19/13 8:23	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:53	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 8:58	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 19:53	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:56	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 12:24	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15319-12***
Sample ID:	DUP8	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/08/13 14:30	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.25			mg/L	0.01	0.05	11/09/13 0:00	aeb
Copper, total (3050)	M6010B ICP	101	891		*	mg/Kg	1	5	11/20/13 14:39	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2									
Max Particle Size		1	2000		*	um			11/20/13 0:00	spl
pH		1	6.8		*	units	0.1	0.1	11/20/13 0:00	spl
Solids, Percent	CLPSOW390, PART F, D-98	1	95.6		*	%	0.1	0.5	11/19/13 9:39	rjv

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				11/06/13 18:59	spl
Digestion - Hot Plate	M3050B ICP								11/19/13 10:29	cdb
Saturated Paste Extraction	USDA No. 60 (2)				*				11/19/13 20:00	spl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				11/07/13 19:59	spl
Synthetic Precip. Leaching Procedure	M1312								11/07/13 13:27	cra/cdb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Inorganic QC Summary

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15319***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355163													
WG355163ICV	ICV	11/20/13 13:24	II131111-1	100		100	mg/L	100	90	110			
WG355163ICB	ICB	11/20/13 13:27				U	mg/L		-0.6	0.6			
WG355012PBS	PBS	11/20/13 13:40				U	mg/Kg		-60	60			
WG355012LCSS	LCSS	11/20/13 13:43	PCN42472	7890		7357	mg/Kg		6500	9290			
WG355012LCSSD	LCSSD	11/20/13 13:46	PCN42472	7890		7687	mg/Kg		6500	9290	4.4	20	
L15319-01MS	MS	11/20/13 13:52	II131029-2	7072.234	16800	24565	mg/Kg	109.8	75	125			
L15319-01MSD	MSD	11/20/13 13:55	II131029-2	7072.234	16800	23535	mg/Kg	95.2	75	125	4.28	20	
WG355204													
WG355204ICV	ICV	11/20/13 15:24	II131111-1	100		99.74	mg/L	99.7	90	110			
WG355204ICB	ICB	11/20/13 15:27				U	mg/L		-0.6	0.6			
WG355012PBS	PBS	11/20/13 15:40				U	mg/Kg		-60	60			
WG355012LCSS	LCSS	11/20/13 15:43	PCN42472	7890		7224	mg/Kg		6500	9290			
WG355012LCSSD	LCSSD	11/20/13 15:46	PCN42472	7890		7593	mg/Kg		6500	9290	5	20	
L15319-01MS	MS	11/20/13 15:52	II131029-2	7072.234	16700	24461	mg/Kg	109.7	75	125			
L15319-01MSD	MSD	11/20/13 15:55	II131029-2	7072.234	16700	23358	mg/Kg	94.1	75	125	4.61	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354677													
WG354677PBS	PBS	11/11/13 15:00				U	%		-0.3	0.3			
WG354677LCSS	LCSS	11/11/13 16:08	PCN42350	4.19		4.3	%		80	120			
L15308-05DUP	DUP	11/11/13 18:24			1.7	1.8	%				5.7	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354677													
WG354677PBS	PBS	11/11/13 15:00				U	%		-0.3	0.3			
L15308-05DUP	DUP	11/11/13 18:24			1.2	1.2	%				0	20	ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354592													
WG354592ICV	ICV	11/08/13 22:45	II130820-1	2		1.961	mg/L	98.1	90	110			
WG354592ICB	ICB	11/08/13 22:48				U	mg/L		-0.03	0.03			
WG354429PBS	PBS	11/08/13 23:01				U	mg/L		-0.03	0.03			
WG354429LFB	LFB	11/08/13 23:04	II131029-2	.5		.493	mg/L	98.6	85	115			
L15319-01DUP	DUP	11/08/13 23:10			1.18	1.385	mg/L				16	20	
L15319-02MS	MS	11/08/13 23:16	II131029-2	.5	.34	.82	mg/L	96	75	125			
L15319-02MSD	MSD	11/08/13 23:19	II131029-2	.5	.34	.815	mg/L	95	75	125	0.61	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355163													
WG355163ICV	ICV	11/20/13 13:24	II131111-1	2		1.924	mg/L	96.2	90	110			
WG355163ICB	ICB	11/20/13 13:27				U	mg/L		-0.03	0.03			
WG355012PBS	PBS	11/20/13 13:40				U	mg/Kg		-3	3			
WG355012LCSS	LCSS	11/20/13 13:43	PCN42472	162		150	mg/Kg		135	190			
WG355012LCSSD	LCSSD	11/20/13 13:46	PCN42472	162		154.2	mg/Kg		135	190	2.8	20	
L15319-01MS	MS	11/20/13 13:52	II131029-2	52	3400	3485	mg/Kg	163.5	75	125			M3
L15319-01MSD	MSD	11/20/13 13:55	II131029-2	52	3400	3314.5	mg/Kg	-164.4	75	125	5.02	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354834													
WG354834ICV	ICV	11/13/13 20:59	WI131015-1	2.416		2.368	mg/L	98	90	110			
WG354834ICB	ICB	11/13/13 21:00				U	mg/L		-0.06	0.06			
WG354838													
WG354838LFB	LFB	11/13/13 22:04	WI130816-3	2		2.006	mg/Kg	100.3	90	110			
WG354768PBS	PBS	11/13/13 22:05				.16	mg/Kg		-0.3	0.3			
L15308-05DUP	DUP	11/13/13 22:08			.6	.69	mg/Kg				14	20	RA
L15308-18AS	AS	11/13/13 22:19	WI130816-3	10	8.6	17.7	mg/Kg	91	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354834													
WG354834ICV	ICV	11/13/13 20:59	WI131015-1	.609		.626	mg/L	102.8	90	110			
WG354834ICB	ICB	11/13/13 21:00				U	mg/L		-0.03	0.03			
WG354838													
WG354838LFB	LFB	11/13/13 22:04	WI130816-3	1		.988	mg/Kg	98.8	90	110			
WG354768PBS	PBS	11/13/13 22:05				U	mg/Kg		-0.15	0.15			
L15308-05DUP	DUP	11/13/13 22:08			.09	.157	mg/Kg				54.3	20	RA
L15308-18AS	AS	11/13/13 22:19	WI130816-3	5	U	4.43	mg/Kg	88.6	90	110			M2

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354803													
WG354803ICV	ICV	11/13/13 15:23	WI131021-1	1.003		1.009	mg/L	100.6	90	110			
WG354803ICB	ICB	11/13/13 15:27				U	mg/L		-0.15	0.15			
WG354822													
WG354822LFB	LFB	11/13/13 16:53	WI121218-3	1		1.047	mg/Kg	104.7	90	110			
WG354768PBS	PBS	11/13/13 16:54				U	mg/Kg		-0.9	0.9			
L15308-05DUP	DUP	11/13/13 16:56			U	.52	mg/Kg				200	20	RA
L15308-18AS	AS	11/13/13 17:07	WI121218-3	5	U	5.38	mg/Kg	107.6	75	125			

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15319***

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354975													
WG354975ICV	ICV	11/19/13 12:39	WI131113-4	4		4.18	mg/L	104.5	90	110			
WG354975ICB	ICB	11/19/13 12:40				U	mg/L		-0.3	0.3			
WG354881PBS	PBS	11/19/13 12:41				U	%		-0.006	0.006			
WG354881LFB	LFB	11/19/13 12:45	WI131113-5	2.5		2.51	%	100.4	85	115			
L15308-17MS	MS	11/19/13 12:47	WI131113-5	475	.096	.1491	%	111.8	75	125			
L15308-18DUP	DUP	11/19/13 12:49			.092	.0848	%				8.1	20	

pH, Saturated Paste EPA 600/2-78-054, section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355188													
WG355188ICV	ICV	11/20/13 12:14	PCN42578	4		3.99	units	99.8	97	103			
L15319-01DUP	DUP	11/20/13 12:20			7.5	7.65	units				2	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355163													
WG355163ICV	ICV	11/20/13 13:24	II131111-1	20		19.78	mg/L	98.9	90	110			
WG355163ICB	ICB	11/20/13 13:27				U	mg/L		-0.9	0.9			
WG355012PBS	PBS	11/20/13 13:40				U	mg/Kg		-90	90			
WG355012LCSS	LCSS	11/20/13 13:43	PCN42472	2600		2719	mg/Kg		1720	3470			
WG355012LCSSD	LCSSD	11/20/13 13:46	PCN42472	2600		2838	mg/Kg		1720	3470	4.3	20	
L15319-01MS	MS	11/20/13 13:52	II131029-2	10394.32056	5970	16110	mg/Kg	97.6	75	125			
L15319-01MSD	MSD	11/20/13 13:55	II131029-2	10394.32056	5970	16099	mg/Kg	97.4	75	125	0.07	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG355058													
WG355058PBS	PBS	11/18/13 17:00				U	%		99.9	100.1			
L15319-01DUP	DUP	11/18/13 19:33			92.8	92.59	%				0.2	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15319-01	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-02	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-03	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-04	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-05	WG355163	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15319-06	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15319-07	WG355163	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15319-08	WG355163	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG354677	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG354838	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354822	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG354975	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L15319-09	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-10	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-11	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L15319-12	WG355163	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	EPA 600/2-78-054, section 3.2.2
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15319
Date Received: 10/30/2013 10:12
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate? The Date/Time was not present on samples containers 5-12, Relinquished Date/Time used to enter samples.		X	▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2983	12.4	15	Yes
3251	13.5	13	Yes
3403	12	14	Yes
3627	12.3	13	Yes
3721	12.9	13	Yes
3944	12.3	13	Yes
3991	12	15	Yes

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15319
Date Received: 10/30/2013 10:12
Received By: mtb
Date Printed: 10/30/2013

Was ice present in the shipment container(s)?

`No - Wet or gel ice was not present in the shipment container(s).`

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc L15319

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-NEREF5 0-6	10/23/2013 1645	SO	1	x	x	x					
STS-AMD-2013F-NEREF6 0-6	10/23/2013 1640	SO	1	x	x	x					
STS-AMD-2013F-NEREF7 0-6	10/23/2013 1650	SO	1	x	x	x					
STS-AMD-2013F-NEREF8 0-6	10/23/2013 1625	SO	1	x	x	x					
• DUP1		SO	1	x	x	x	x	x	x	x	
• DUP2		SO	1	x	x	x	x	x	x	x	
• DUP3		SO	1	x	x	x	x	x	x	x	
• DUP4		SO	1	x	x	x	x	x	x	x	
• DUP5		SO	1	x	x	x					
• DUP6		SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

(1)

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-24-13/ 3pm		
		LRC 10-30-13 10:16	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. U15319

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Total Copper					
DUP7		SO	1	x	x	x						
DUP8		SO	1	x	x	x						
RINSATE1		W	1				x					
RINSATE2		W	1				x					
RINSATE3		W	1				x					
RINSATE4		W	1				x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

(2)

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13 / 3 PM		
		LPL 10-30-13 10:16	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 22, 2013

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

cc: Matthew Barkley

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

Project ID: ZN000001M5
ACZ Project ID: L15320

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 30, 2013. This project has been assigned to ACZ's project number, L15320. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L15320. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 22, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S.Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Freeport-McMoRan - Chino Mines Company

November 22, 2013

Project ID: ZN000001M5
ACZ Project ID: L15320

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 12 soil samples from Freeport-McMoRan - Chino Mines Company on October 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L15320. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The following modifications have been made to the SPLP Copper analysis (N1):

1) The soil to solution ratio was reduced to better simulate soils wetted by rainfall. A ratio of 1:5 soil:solution should be used for chemical analysis.

2) A 0.01 M $CaCl_2$ lixiviant was used instead of deionized water to better simulate the ionic strength of soil solutions (after Sauve et al. 1995); and

3) No adjustment to the initial pH of the soil solution to 5, as is commonly done in the Standard Method 1312 implementation. This step is taken to help ensure that the pH of the soil solution is due to the elements of the solution, not an outside source of acid.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2013F-NEREF5 0-6

ACZ Sample ID:	***L15320-01***
Date Sampled:	*10/23/13 16:45*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 15:56	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	1.29			mg/L	0.01	0.05	11/12/13 11:01	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/07/13 21:27	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-02***
Sample ID:	STS-AMD-2013F-NEREF6 0-6	Date Sampled:	*10/23/13 16:40*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 16:32	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	4.10			mg/L	0.01	0.05	11/12/13 11:07	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/07/13 23:16	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-03***
Sample ID:	STS-AMD-2013F-NEREF7 0-6	Date Sampled:	*10/23/13 16:50*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 17:26	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.69			mg/L	0.01	0.05	11/12/13 11:16	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 2:00	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-04***
Sample ID:	STS-AMD-2013F-NEREF8 0-6	Date Sampled:	*10/23/13 16:25*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 17:45	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.85			mg/L	0.01	0.05	11/12/13 11:20	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 2:54	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-05***
Sample ID:	DUP1	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 18:03	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.93			mg/L	0.01	0.05	11/12/13 11:23	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 3:49	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-06***
Sample ID:	DUP2	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 18:21	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/12/13 11:32	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 5:38	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: DUP3

ACZ Sample ID: ***L15320-07***
Date Sampled: *10/24/13 15:00*
Date Received: *10/30/13*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 18:39	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/12/13 11:35	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 6:32	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	DUP4
ACZ Sample ID:	***L15320-08***
Date Sampled:	*10/24/13 15:00*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 18:57	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.03	B		mg/L	0.01	0.05	11/12/13 11:38	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 7:27	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-09***
Sample ID:	DUP5	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 19:15	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/12/13 11:41	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 8:21	cdb/cra

Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L15320-10***
Project ID:	ZN000001M5	Date Sampled:	*10/24/13 15:00*
Sample ID:	DUP6	Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 19:33	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.07			mg/L	0.01	0.05	11/12/13 11:47	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 9:16	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	DUP7
ACZ Sample ID:	***L15320-11***
Date Sampled:	*10/24/13 15:00*
Date Received:	*10/30/13*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 19:52	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.02	B		mg/L	0.01	0.05	11/12/13 11:50	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 10:11	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L15320-12***
Sample ID:	DUP8	Date Sampled:	*10/24/13 15:00*
		Date Received:	*10/30/13*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP								11/11/13 20:10	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	1	0.18			mg/L	0.01	0.05	11/12/13 11:54	aeb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312				*				11/08/13 11:05	cdb/cra

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG354700													
WG354700ICV	ICV	11/12/13 10:40	II131111-1	2		1.974	mg/L	98.7	90	110			
WG354700ICB	ICB	11/12/13 10:43				U	mg/L		-0.03	0.03			
WG354513PBS	PBS	11/12/13 10:55				U	mg/L		-0.03	0.03			
WG354513LFB	LFB	11/12/13 10:58	II131029-2	.5		.534	mg/L	106.8	85	115			
L15320-01DUP	DUP	11/12/13 11:04			1.29	1.312	mg/L				1.7	20	
L15320-02MS	MS	11/12/13 11:10	II131029-2	.5	4.1	4.622	mg/L	104.4	75	125			
L15320-02MSD	MSD	11/12/13 11:13	II131029-2	.5	4.1	4.635	mg/L	107	75	125	0.28	20	

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15320***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L15320-01	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-02	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-03	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-04	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-05	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-06	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-07	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-08	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-09	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-10	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-11	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.
L15320-12	WG354513	Synthetic Precip. Leaching Procedure	M1312	N1	See Case Narrative.

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L15320***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L15320
Date Received: 10/30/2013 10:12
Received By: mtb
Date Printed: 10/30/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?		X	▨
`The Date/Time was not present on samples containers 5-12,` `Relinquished Date/Time used to enter samples.`			
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id     Temp (°C)     Rad (µR/Hr)     Custody Seal Intact?
---------     ---------     -----------     --------------------
2983          12.4          15              Yes
3251          13.5          13              Yes
3403          12            14              Yes
3627          12.3          13              Yes
3721          12.9          13              Yes
3944          12.3          13              Yes
3991          12            15              Yes
```

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L15320
Date Received:	10/30/2013 10:12
Received By:	mtb
Date Printed:	10/30/2013

Was ice present in the shipment container(s)?

```
No - Wet or gel ice was not present in the shipment container(s).
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L15320

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION | **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2013F-NEREF5 0-6	10/23/2013 1645	SO	1	x	x	x					
STS-AMD-2013F-NEREF6 0-6	10/23/2013 1640	SO	1	x	x	x					
STS-AMD-2013F-NEREF7 0-6	10/23/2013 1650	SO	1	x	x	x					
STS-AMD-2013F-NEREF8 0-6	10/23/2013 1625	SO	1	x	x	x					
• DUP1		SO	1	x	x	x	x	x	x	x	
• DUP2		SO	1	x	x	x	x	x	x	x	
• DUP3		SO	1	x	x	x	x	x	x	x	
• DUP4		SO	1	x	x	x	x	x	x	x	
• DUP5		SO	1	x	x	x					
• DUP6		SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

①

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-24-13/ 3pm		
		LPC 10.30.16 10:16	

L15320 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L15320

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Patrick Quinn
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper Total and SPLP*	pH	Total Copper				
DUP7		SO	1	x	x	x					
DUP8		SO	1	x	x	x					
RINSATE1		W	1				x				
RINSATE2		W	1				x				
RINSATE3		W	1				x				
RINSATE4		W	1				x				

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

②

REMARKS

COPY

Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis
* SPLP Copper done two ways: 1) Standard 2) Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-28-13/ 3PM		
		LPL 10-30-16 10:16	

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ANALYTICAL SUMMARY REPORT

December 20, 2013

Chino Mine Company
PO Box 10
Bayard, NM 88023

Workorder No.: H13110367

Project Name: Amendment Study Samples

Energy Laboratories Inc Helena MT received the following 40 samples for Chino Mine Company on 11/1/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H13110367-001	STS-AMD-2013F-W1 0-6 [0-6]	10/24/13 12:55	11/01/13	Soil	Metals, Water Extractable Copper Activity CaCl2 Hot Water Soil Extraction Soil Preparation
H13110367-002	STS-AMD-2013F-W2 0-6 [0-6]	10/24/13 12:42	11/01/13	Soil	Metals, Water Extractable Copper Activity CaCl2 Hot Water Soil Extraction
H13110367-003	STS-AMD-2013F-W3 0-6 [0-6]	10/24/13 13:00	11/01/13	Soil	Same As Above
H13110367-004	STS-AMD-2013F-W1 (18-24) [18-24]	10/24/13 13:35	11/01/13	Soil	Same As Above
H13110367-005	STS-AMD-2013F-W2 (18-24) [18-24]	10/24/13 13:30	11/01/13	Soil	Same As Above
H13110367-006	STS-AMD-2013F-W3 (6-12) [6-12]	10/24/13 13:40	11/01/13	Soil	Same As Above
H13110367-007	STS-AMD-2013F-E1 0-6 [0-6]	10/25/13 9:35	11/01/13	Soil	Same As Above
H13110367-008	STS-AMD-2013F-E2 0-6 [0-6]	10/25/13 9:30	11/01/13	Soil	Same As Above
H13110367-009	STS-AMD-2013F-E3 0-6 [0-6]	10/25/13 9:45	11/01/13	Soil	Same As Above
H13110367-010	STS-AMD-2013F-E1 (15-21) [15-21]	10/25/13 10:42	11/01/13	Soil	Same As Above
H13110367-011	STS-AMD-2013F-E2 (18-24) [18-24]	10/25/13 10:33	11/01/13	Soil	Same As Above
H13110367-012	STS-AMD-2013F-E3 (10-16) [10-16]	10/25/13 10:35	11/01/13	Soil	Same As Above
H13110367-013	STS-AMD-2013F-N1 0-6 [0-6]	10/24/13 17:17	11/01/13	Soil	Same As Above
H13110367-014	STS-AMD-2013F-N2 0-6 [0-6]	10/24/13 17:10	11/01/13	Soil	Same As Above
H13110367-015	STS-AMD-2013F-N3 0-6 [0-6]	10/24/13 17:25	11/01/13	Soil	Same As Above
H13110367-016	STS-AMD-2013F-N1 12-18 [12-18]	10/24/13 17:57	11/01/13	Soil	Same As Above
H13110367-017	STS-AMD-2013F-N2 15-21 [15-21]	10/24/13 18:10	11/01/13	Soil	Same As Above
H13110367-018	STS-AMD-2013F-N3 18-24 [18-24]	10/24/13 18:00	11/01/13	Soil	Same As Above

ANALYTICAL SUMMARY REPORT

H13110367-019	STS-AMD-2013F-NE1 0-6 [0-6]	10/24/13 9:30	11/01/13	Soil	Same As Above
H13110367-020	STS-AMD-2013F-NE2 0-6 [0-6]	10/24/13 9:20	11/01/13	Soil	Same As Above
H13110367-021	STS-AMD-2013F-NE3 0-6 [0-6]	10/24/13 9:15	11/01/13	Soil	Same As Above
H13110367-022	STS-AMD-2013F-NE1 (15-21) [15-21]	10/24/13 10:50	11/01/13	Soil	Same As Above
H13110367-023	STS-AMD-2013F-NE2 (15-21) [15-21]	10/24/13 11:10	11/01/13	Soil	Same As Above
H13110367-024	STS-AMD-2013F-NE3 (6-12) [6-12]	10/24/13 11:00	11/01/13	Soil	Same As Above
H13110367-025	STS-AMD-2013F-WREF1 0-6 [0-6]	10/24/13 15:00	11/01/13	Soil	Same As Above
H13110367-026	STS-AMD-2013F-WREF2 0-6 [0-6]	10/24/13 15:25	11/01/13	Soil	Same As Above
H13110367-027	STS-AMD-2013F-WREF1 (12-18) [12-18]	10/24/13 15:45	11/01/13	Soil	Same As Above
H13110367-028	STS-AMD-2013F-WREF2 (12-18) [12-18]	10/24/13 15:43	11/01/13	Soil	Same As Above
H13110367-029	STS-AMD-2013F-EREF1 0-6 [0-6]	10/25/13 11:47	11/01/13	Soil	Same As Above
H13110367-030	STS-AMD-2013F-EREF2 0-6 [0-6]	10/25/13 11:30	11/01/13	Soil	Same As Above
H13110367-031	STS-AMD-2013F-EREF1 (6-12) [6-12]	10/25/13 12:20	11/01/13	Soil	Same As Above
H13110367-032	STS-AMD-2013F-EREF2 (12-18) [12-18]	10/25/13 12:30	11/01/13	Soil	Same As Above
H13110367-033	STS-AMD-2013F-NREF1 0-6 [0-6]	10/25/13 14:50	11/01/13	Soil	Same As Above
H13110367-034	STS-AMD-2013F-NREF2 0-6 [0-6]	10/25/13 14:55	11/01/13	Soil	Same As Above
H13110367-035	STS-AMD-2013F-NREF1 (18-24) [18-24]	10/25/13 15:30	11/01/13	Soil	Same As Above
H13110367-036	STS-AMD-2013F-NREF2 (12-18) [12-18]	10/25/13 15:35	11/01/13	Soil	Same As Above
H13110367-037	STS-AMD-2013F-NEREF1 0-6 [0-6]	10/23/13 16:35	11/01/13	Soil	Same As Above
H13110367-038	STS-AMD-2013F-NEREF2 0-6 [0-6]	10/23/13 16:15	11/01/13	Soil	Same As Above
H13110367-039	STS-AMD-2013F-NEREF1 (12-18) [12-18]	10/23/13 17:30	11/01/13	Soil	Same As Above
H13110367-040	STS-AMD-2013F-NEREF2 (12-18) [12-18]	10/23/13 17:50	11/01/13	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

ANALYTICAL SUMMARY REPORT

Report Approved By:

CLIENT: Chino Mine Company
Project: Amendment Study Samples
Sample Delivery Group: H13110367

Report Date: 12/20/13

CASE NARRATIVE

Standard operating procedure submitted by Arcadis as "Standard Operating Procedures for Measurement of Cu2+ Activity in Soil by Ion-Selective Electrode" (ed. September 2013). Copper activity measured with a Combination Cupric Sure-Flow Ion Selective Electrode (Thermo Scientific, 9629BNWP) as per SOP. All samples and standards were filtered through 0.22µm membrane cellulose-acetate filters (Whatman, 10404112), prior to analysis. All analysis was performed under reduced light conditions. STP 12/18/13

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client:	Chino Mine Company	**Report Date:**	12/20/13
Project:	Amendment Study Samples	**Date Received:**	11/01/13
Workorder:	H13110367		

		Analysis		Cu-CACL2	Conductivity, CaCl2	Millivolts	pCu, Measured	ph, CaCl2
		Units		mg/kg	mmhos/cm	mV	s_u_	s_u_
Sample ID	**Client Sample ID**	**Up**	**Low**	**Results**	**Results**	**Results**	**Results**	**Results**
H13110367-001	STS-AMD-2013F-W1 0-6	0	6	0.1	2.1	-80	9.02	7.2
H13110367-002	STS-AMD-2013F-W2 0-6	0	6	0.3	2.2	-69	8.56	7.0
H13110367-003	STS-AMD-2013F-W3 0-6	0	6	< 0.1	2.1	-85	9.26	7.2
H13110367-004	STS-AMD-2013F-W1 (18-24)	18	24	< 0.1	2.2	-84	9.21	7.1
H13110367-005	STS-AMD-2013F-W2 (18-24)	18	24	< 0.1	2.1	-86	9.30	7.2
H13110367-006	STS-AMD-2013F-W3 (6-12)	6	12	< 0.1	2.1	-86	9.33	7.0
H13110367-007	STS-AMD-2013F-E1 0-6	0	6	1.0	2.4	-86	9.31	7.3
H13110367-008	STS-AMD-2013F-E2 0-6	0	6	1.2	2.7	-18	6.40	6.4
H13110367-009	STS-AMD-2013F-E3 0-6	0	6	0.8	2.4	-1	5.67	5.8
H13110367-010	STS-AMD-2013F-E1 (15-21)	15	21	< 0.1	3.3	-65	8.41	7.1
H13110367-011	STS-AMD-2013F-E2 (18-24)	18	24	< 0.1	3.4	-71	8.68	7.1
H13110367-012	STS-AMD-2013F-E3 (10-16)	10	16	0.1	2.6	-70	8.60	7.0
H13110367-013	STS-AMD-2013F-N1 0-6	0	6	0.2	2.1	-30	6.88	6.4
H13110367-014	STS-AMD-2013F-N2 0-6	0	6	1.5	2.3	-2	5.68	6.0
H13110367-015	STS-AMD-2013F-N3 0-6	0	6	0.9	2.1	5	5.40	5.7
H13110367-016	STS-AMD-2013F-N1 12-18	12	18	< 0.1	2.1	-34	7.06	6.9
H13110367-017	STS-AMD-2013F-N2 15-21	15	21	< 0.1	2.3	-59	7.06	7.3
H13110367-018	STS-AMD-2013F-N3 18-24	18	24	< 0.1	2.2	-59	8.13	7.2
H13110367-019	STS-AMD-2013F-NE1 0-6	0	6	2.4	2.4	-21	6.53	7.2
H13110367-020	STS-AMD-2013F-NE2 0-6	0	6	113	3.0	72	2.52	4.4
H13110367-021	STS-AMD-2013F-NE3 0-6	0	6	2.6	2.3	27	4.46	5.8
H13110367-022	STS-AMD-2013F-NE1 (15-21)	15	21	0.9	2.5	-26	6.74	7.0
H13110367-023	STS-AMD-2013F-NE2 (15-21)	15	21	0.4	2.8	-40	7.31	7.4

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Chino Mine Company
Project: Amendment Study Samples
Workorder: H13110367

Report Date: 12/20/13
Date Received: 11/01/13

		Analysis		Cu-CACL2	Conductivity, CaCl2	Millivolts	pCu, Measured	ph, CaCl2
		Units		mg/kg	mmhos/cm	mV	s_u_	s_u_
Sample ID	**Client Sample ID**	**Up**	**Low**	**Results**	**Results**	**Results**	**Results**	**Results**
H13110367-024	STS-AMD-2013F-NE3 (6-12)	6	12	1.1	2.3	18	4.83	5.8
H13110367-025	STS-AMD-2013F-WREF1 0-6	0	6	0.1	2.2	-61	8.23	7.6
H13110367-026	STS-AMD-2013F-WREF2 0-6	0	6	0.2	2.2	-62	8.28	7.0
H13110367-027	STS-AMD-2013F-WREF1 (12-18)	12	18	< 0.1	2.2	-68	8.54	7.4
H13110367-028	STS-AMD-2013F-WREF2 (12-18)	12	18	0.1	2.2	-76	8.88	7.5
H13110367-029	STS-AMD-2013F-EREF1 0-6	0	6	0.3	2.1	-9	6.00	6.9
H13110367-030	STS-AMD-2013F-EREF2 0-6	0	6	9.3	2.1	50	3.44	4.6
H13110367-031	STS-AMD-2013F-EREF1 (6-12)	6	12	0.2	2.2	-14	7.04	6.6
H13110367-032	STS-AMD-2013F-EREF2 (12-18)	12	18	0.2	2.6	-14	7.06	6.9
H13110367-033	STS-AMD-2013F-NREF1 0-6	0	6	0.7	2.1	30	5.38	5.8
H13110367-034	STS-AMD-2013F-NREF2 0-6	0	6	0.3	2.1	12	6.04	6.2
H13110367-035	STS-AMD-2013F-NREF1 (18-24)	18	24	< 0.1	2.4	-51	8.49	7.6
H13110367-036	STS-AMD-2013F-NREF2 (12-18)	12	18	< 0.1	2.8	-50	8.43	7.4
H13110367-037	STS-AMD-2013F-NEREF1 0-6	0	6	5.3	2.2	58	4.31	5.0
H13110367-038	STS-AMD-2013F-NEREF2 0-6	0	6	88.4	2.3	94	2.92	4.1
H13110367-039	STS-AMD-2013F-NEREF1 (12-18)	12	18	0.4	2.4	-21	7.33	7.4
H13110367-040	STS-AMD-2013F-NEREF2 (12-18)	12	18	1.7	2.2	43	4.86	4.8

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Chino Mine Company
Project: Amendment Study Samples
Report Date: 12/20/13
Work Order: H13110367

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: arcadis SOP									Batch: 22752
Sample ID: LCS-22752	Laboratory Control Sample				Run: MISC SOILS_131220B				12/20/13 10:46
Conductivity, CaCl2	2.90	mmhos/cm	0.10	111	70	130			
pCu, Measured	9.06	s.u.	0.010	104	70	130			
ph, CaCl2	7.43	s.u.	0.10	102	70	130			
Sample ID: H13110367-010Adup	Sample Duplicate				Run: MISC SOILS_131220B				12/20/13 10:56
Conductivity, CaCl2	3.32	mmhos/cm	0.10						
Millivolts	-68.1	mV							
pCu, Measured	8.53	s.u.	0.010						
ph, CaCl2	7.08	s.u.	0.10						
Sample ID: H13110367-020Adup	Sample Duplicate				Run: MISC SOILS_131220B				12/20/13 11:16
Conductivity, CaCl2	2.98	mmhos/cm	0.10						
Millivolts	71.4	mV							
pCu, Measured	2.54	s.u.	0.010						
ph, CaCl2	4.39	s.u.	0.10						
Method: arcadis SOP									Batch: 22753
Sample ID: LCS-22753	Laboratory Control Sample				Run: MISC SOILS_131220B				12/20/13 11:20
Conductivity, CaCl2	3.02	mmhos/cm	0.10	116	70	130			
pCu, Measured	8.88	s.u.	0.010	102	70	130			
ph, CaCl2	7.47	s.u.	0.10	103	70	130			
Sample ID: H13110367-030Adup	Sample Duplicate				Run: MISC SOILS_131220B				12/20/13 11:37
Conductivity, CaCl2	2.13	mmhos/cm	0.10						
Millivolts	49.9	mV							
pCu, Measured	3.46	s.u.	0.010						
ph, CaCl2	4.53	s.u.	0.10						
Sample ID: H13110367-040Adup	Sample Duplicate				Run: MISC SOILS_131220B				12/20/13 11:49
Conductivity, CaCl2	2.19	mmhos/cm	0.10						
Millivolts	43.3	mV							
pCu, Measured	4.86	s.u.	0.010						
ph, CaCl2	4.70	s.u.	0.10						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Chino Mine Company
Project: Amendment Study Samples

Report Date: 12/20/13
Work Order: H13110367

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS204-B_131216B
Sample ID: **ICV STD**	Initial Calibration Verification Standard								12/16/13 11:10
Copper	0.0607	mg/L	0.0010	101	90	110			
Sample ID: **ICV STD**	Initial Calibration Verification Standard								12/16/13 16:27
Copper	0.0610	mg/L	0.0010	102	90	110			
Method: **SW6020**									Batch: 22752
Sample ID: **MB-22752**	Method Blank				Run: ICPMS204-B_131216B				12/16/13 21:19
Copper	ND	mg/kg	0.003						
Sample ID: **LFB-22752**	Laboratory Fortified Blank				Run: ICPMS204-B_131216B				12/16/13 21:28
Copper	5.30	mg/kg	0.10	106	80	120			
Sample ID: **H13110367-001AMS**	Sample Matrix Spike				Run: ICPMS204-B_131216B				12/16/13 21:55
Copper	5.39	mg/kg	0.10	105	75	125			
Sample ID: **H13110367-010Adup**	Sample Duplicate				Run: ICPMS204-B_131216B				12/16/13 22:54
Copper	0.0643	mg/kg	0.10						
Method: **SW6020**									Batch: 22753
Sample ID: **MB-22753**	Method Blank				Run: ICPMS204-B_131216B				12/17/13 00:01
Copper	0.04	mg/kg	0.003						
Sample ID: **LFB-22753**	Laboratory Fortified Blank				Run: ICPMS204-B_131216B				12/17/13 00:10
Copper	5.23	mg/kg	0.10	104	80	120			
Sample ID: **H13110367-030Adup**	Sample Duplicate				Run: ICPMS204-B_131216B				12/17/13 01:22
Copper	9.94	mg/kg	0.10						
Sample ID: **H13110367-040Adup**	Sample Duplicate				Run: ICPMS204-B_131216B				12/17/13 02:25
Copper	1.81	mg/kg	0.10						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Chino Mine Company

Project: Amendment Study Samples

Report Date: 12/20/13

Work Order: H13110367

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_131217A
Sample ID: ICV STD	Initial Calibration Verification Standard								12/17/13 10:52
Copper	0.0597	mg/L	0.0010	99	90	110			
Method: SW6020									Batch: 22752
Sample ID: MB-22752	Method Blank				Run: ICPMS204-B_131217A				12/17/13 11:23
Copper	ND	mg/kg	0.03						
Sample ID: H13110367-020Adup	Sample Duplicate				Run: ICPMS204-B_131217A				12/17/13 11:32
Copper	98.9	mg/kg	0.10						
Method: SW6020									Batch: 22753
Sample ID: MB-22753	Method Blank				Run: ICPMS204-B_131217A				12/17/13 11:37
Copper	0.09	mg/kg	0.03						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Chino Mine Company

H13110367

Login completed by: Skyler T. Pester
Date Received: 11/1/2013
Reviewed by: BL2000\sdull
Received by: stp
Reviewed Date: 12/4/2013
Carrier name: NPT

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	°C See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Samples initially received at ELI-Billings 10/29/2013 9:30AM, via UPS NDA. Six coolers received with custody seals and not on ice. Temperatures upon arrival in Billings were cooler 1: 15.8°C, cooler 2: 15.2°C, cooler 3: 17.6°C, cooler 4: 14.0°C (temperature taken from a temp blank), cooler 5:13.8°C, and cooler 6: 14.6°C. Three more coolers were received at ELI-Billings before shipping to ELI-Helena, no information available for these three coolers when they were received in ELI-Billings. Page four of COC not signed and dated when received in ELI-Billings. All nine coolers then shipped to ELI-Helena - two of the nine coolers received for the Amendment Study. Cooler 1 received at 2.6°C and cooler 2 at 3.3°C. Coolers received with custody seals and not on ice. 11/19/2013 STP.

ENERGY LABORATORIES

Chain of Custody and Ar~~a~~lytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 1 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily.Schlenker@arcadis-us.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ________
☐ Other: ________

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ________
☐ LEVEL IV
☐ NELAC

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX (Number of Containers Sample Type: A W S V B O Air Water Soils/Solids Vegetation Bioassay Other)	soil sieved to < 2mm	pCU from Arcadis-Table 4	SEE ATTACHED	Normal Turnaround (TAT)
1	STS-AMD-2013F-W1 0-6	10/24/13	1255	1 S	X	X		
2	STS-AMD-2013F-W2 0-6	10/24/13	1242	1 S	X	X		
3	STS-AMD-2013F-W3 0-6	10/24/13	1300	1 S	X	X		
4	STS-AMD-2013F-W1 (18-24)	10/24/13	1335	1 S	X	X		
5	STS-AMD-2013F-W2 (18-24)	10/24/13	1330	1 S	X	X		
6	STS-AMD-2013F-W3 (6-12)	10/24/13	1340	1 S	X	X		
7	[redacted]			1 S	X	X		
8	[redacted]			1 S	X	X		
9	[redacted]			1 S	X	X		
10	[redacted]			1 S	X	X		

X

RUSH Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler #1-15.8
#2-15.2
#3-17.6
#4-14.0TS
#5-13.8
#10-14.6

H1311036 7

Shipped by: UPS NDA
Cooler ID(s):
Receipt Temp ______ °C
On Ice: Yes [✓ No]
Custody Seal [✓ Y] N
Intact [✓ Y] N
Signature Match [✓ Y] N

LABORATORY USE ONLY

WPT
1-26C
2-33C

Custody Record MUST be Signed	Relinquished by (print): Matthew Barkley	Date/Time: 10/25/13 2015	Signature:	Received by (print):	Date/Time:	Signature:
	Relinquished by (print):	Date/Time:	Signature:	Received by (print): Skyler Pester	Date/Time: 11-1-13 9:20am	Signature: X
	Sample Disposal: Return to Client: ______	Lab Disposal: ______		Received by Laboratory: Michelle Kleihammer	Date/Time: 10/29/13 9:30	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 2 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily. Schlenker@arcadis-US.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ________
☐ Other: ________

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ________
☐ LEVEL IV
☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

R U S H — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler #1-15.8
#2-15.2
#3-17.6
#4-14.0 TB
#5-13.8
#6-14.6

H13110367

Shipped by: UPS NDA NPT
Cooler ID(s):
Receipt Temp ______ °C 1-2.6 2-3.3
On Ice: Yes [✓ No]
Custody Seal Intact [✓ Y] N
Signature Match [✓ Y] N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4
	1 [redacted]			1 S	☒	☒
X	2 STS-AMD-2013F-E1 0-6	10/25/13	0935	1 S	☒	☒
X	3 STS-AMD-2013F-E2 0-6	10/25/13	0930	1 S	☒	☒
X	4 STS-AMD-2013F-E3 0-6	10/25/13	0945	1 S	☒	☒
X	5 STS-AMD-2013F-E1 (15-21)	10/25/13	1042	1 S	☒	☒
X	6 STS-AMD-2013F-E2 (18-24)	10/25/13	1033	1 S	☒	☒
X	7 STS-AMD-2013F-E3 (10-16)	10/25/13	1035	1 S	☒	☒
	8 [redacted]			1 S	☒	☒
	9 S[redacted]			1 S	☒	☒
	10 [redacted]			1 S	☒	☒

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Matthew Barkley	Date/Time: 10/25/13 2015	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): Skyler Pester	Date/Time: 11-1-13 9:20am	Signature: *
Sample Disposal:	Return to Client: ______	Lab Disposal: ______	Received by Laboratory: Michelle Kleehammer	Date/Time: 10/29/13 9:30	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page - 3 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily.Schlenker@arcadis-us.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ________
☐ Other: ________
☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ________
☐ LEVEL IV
☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler #1 · 15.8
#2 - 15.2
#3 · 17.6
#4 · 14.0 ns
#5 · 13.8
#6 - 14.6

H13110367

		SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4
	1	[redacted]			1 S	X	X
	2	[redacted]			1 S	X	X
X	3	STS-AMD-2013F-N1 0-6	10/24/13	1717	1 S	X	X
X	4	STS-AMD-2013F-N2 0-6	10/24/13	1710	1 S	X	X
X	5	STS-AMD-2013F-N3 0-6	10/24/13	1725	1 S	X	X
X	6	STS-AMD-2013F-N1 12-18	10/24/13	1757	1 S	X	X
X	7	STS-AMD-2013F-N2 15-21	10/24/13	1810	1 S	X	X
X	8	STS-AMD-2013F-N3 18-24	10/24/13	1800	1 S	X	X
	9	[redacted]			1 S	X	X
	10	[redacted]			1 S	X	X

LABORATORY USE ONLY

Shipped by: UPS NDA NFI
Cooler ID(s):
Receipt Temp ______ °C 1-26C 2-33C
On Ice: Yes [✓ No]
Custody Seal [✓ Y] N
Intact C [✓ Y] N
Signature Match [✓ Y] N

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson	Date/Time: 10-25-13 2015	Signature: Pam Pinson	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): Skyler Pester	Date/Time: 11-1-13 9:20AM	Signature: *
Sample Disposal: Return to Client: ______ Lab Disposal: ______			Received by Laboratory: Michelle Kluchammer	Date/Time: 10/29/13 9:30	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 4 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily.Schlenker@arcadis-us.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ______
☐ Other: ______

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ______
☐ LEVEL IV
☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler#1 - 15.8
#2 - 15.2
#3 - 17.6
#4 - 14.0 TB
#5 - 13.8
#6 - 14.6

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4
1	[redacted]			1 S	☒	☒
2	[redacted]			1 S	☒	☒
3	[redacted]			1 S	☒	☒
4	STS-AMD-2013F-NE1 0-6	10/24/13	0930	1 S	☒	☒
5	STS-AMD-2013F-NE2 0-6	10/24/13	0920	1 S	☒	☒
6	STS-AMD-2013F-NE3 0-6	10/24/13	0915	1 S	☒	☒
7	STS-AMD-2013F-NE1 (15-20	10/24/13	1050	1 S	☒	☒
8	STS-AMD-2013F-NE2 (15-20	10/24/13	1110	1 S	☒	☒
9	STS-AMD-2013F-NE3 16-10	10/24/13	1100	1 S	☒	☒
10	[redacted]			1 S	☒	☒

Shipped by: UPSNDA NT
Cooler ID(s):
Receipt Temp ______ °C 1-2.6C 2-3.3C
On Ice: Yes [✓ No]
Custody Seal [✓ Y] N
Intact C [✓ Y] N
Signature Match [✓ Y] N

LABORATORY USE ONLY

H13110367

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson	Date/Time: 10-25-13 20:15	Signature: Pam Pinson	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): Skyler Tester	Date/Time: 11-1-13 9:20Am	Signature: *
Sample Disposal: Return to Client: ______	Lab Disposal: ______		Received by Laboratory:	Date/Time:	Signature:

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 5 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily.Schlenker@arcadis-us.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ____
☐ Other: ____

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ____
☐ LEVEL IV
☐ NELAC

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler #1 · 15.8
#2 · 15.2
#3 · 17.6
#4 · 14.0
#5 · 13.8
#6 · 14.6

H13110367

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX (Number of Containers, Sample Type: A W S V B O — Air Water Soils/Solids Vegetation Bioassay Other)	soil sieved to < 2mm	pCU from Arcadis-Table 4
1 [redacted]			1 S	X	X
2 [redacted]			1 S	X	X
3 [redacted]			1 S	X	X
4 [redacted]			1 S	X	X
5 STS-AMD-2013F-WREF1 0-6	10/24/13	1500	1 S	X	X
6 STS-AMD-2013F-WREF2 0-6	10/24/13	1525	1 S	X	X
7 STS-AMD-2013F-WREF1 (12-18)	10/24/13	1545	1 S	X	X
8 STS-AMD-2013F-WREF2 (12-18)	10/24/13	1543	1 S	X	X
9 [redacted]			1 S	X	X
10 [redacted]			1 S	X	X

LABORATORY USE ONLY

Shipped by: UPSNDA NPT
Cooler ID(s):
Receipt Temp 1-2.6C 2-3.3C °C
On Ice: Yes [✓ No]
Custody Seal [✓ Y] N
Intact C [✓ Y] N
Signature Match [✓ Y] N

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson	Date/Time: 10-25-13 2015	Signature: Pam Pinson	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): Skyler Rester	Date/Time: 11-1-13 9:20AM	Signature: *
Sample Disposal: Return to Client: ____	Lab Disposal: ____		Received by Laboratory: Michelle Kluhammer	Date/Time: 10/29/13 9:30	Signature:

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 10 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily.Schlenker@arcadis-us.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ____
☐ Other: ____

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ____
☐ LEVEL IV
☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

R U S H Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler#1 · 15.8
#2 · 15.2
#3 · 17.6
#4 · 14.0 TB
#5 · 13.8
#6 · 14.6

H13110367

Shipped by: UPS/UDA

Cooler ID(s):

Receipt Temp ____ °C 1-2.6C 2-3.3C

On Ice: Yes [✓ No]

Custody Seal [✓ Y] N
Intact C [✓ Y] N
Signature Match [✓ Y] N

LABORATORY USE ONLY

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4
1	[redacted]			1 S	X	X
2	[redacted]			1 S	X	X
3	[redacted]			1 S	X	X
4	[redacted]			1 S	X	X
5	STS-AMD-2013F-EREF1 0-6	10/25/13	1147	1 S	X	X
6	STS-AMD-2013F-EREF2 0-6	10/25/13	1130	1 S	X	X
7	STS-AMD-2013F-EREF1 (6-12)	10/25/13	1220	1 S	X	X
8	STS-AMD-2013F-EREF2 (12-18)	10/25/13	1230	1 S	X	X
9	[redacted]			1 S	X	X
10	[redacted]			1 S	X	X

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson	Date/Time: 10-25-13 2015	Signature: Pam Pinson	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): Skyler Yoster	Date/Time: 11-1-13 9:20Am	Signature: *
Sample Disposal:	Return to Client: ____	Lab Disposal: ____	Received by Laboratory: Michelle Kleekammer	Date/Time: 10/29/13 9:30	Signature:

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 7 of 10

Company Name: ARCADIS

Project Name, PWS, Permit, Etc.: Amendment Study Samples

Sample Origin State: NM

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address: Pam Pinson -Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Contact Name: Emily Schlenker

Phone/Fax: 303-231-9115 ext 114

Email: Emily.Schlenker@arcadis-us.com

Sampler: (Please Print) Matthew Barkley

Invoice Address: Pam Pinson- Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Invoice Contact & Phone: Pam Pinson 575-912-5213

Purchase Order:

Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ________
☐ Other: ________

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ________
☐ LEVEL IV
☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cool(#1)-15.8
#2-15.2
#3-17.6
#4-14.0 TS
#5-13.8
#6-14.6

H13110367

Shipped by: UPS NDA NPT

Cooler ID(s):

Receipt Temp ____ °C 1-2.6C 2-3.3C

On Ice: Yes [✓ No]

Custody Seal Intact C [✓ Y] N

[✓ Y] N

Signature Match [✓ Y] N

LABORATORY USE ONLY

		SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4							
	1	[redacted]-6			1 S	☒	☒							
	2	[redacted]6			1 S	☒	☒							
	3	[redacted]			1 S	☒	☒							
	4	[redacted]6			1 S	☒	☒							
X	5	STS-AMD-2013F-NREF1 0-6	10/25/13	1450	1 S	☒	☒							
X	6	STS-AMD-2013F-NREF2 0-6	10/28/13	1455	1 S	☒	☒							
X	7	STS-AMD-2013F-NREF1([redacted]	10/28/13	1530	1 S	☒	☒							
X	8	STS-AMD-2013F-NREF2([redacted]	10/28/13	1535	1 S	☒	☒							
	9	[redacted]			1 S	☒	☒							
	10	ST[redacted] 0-6			1 S	☒	☒							

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Pam Pinson	10-25-13 2015	Pam Pinson			
			Skyler Foster	11-1-13 9:20Am	*

Sample Disposal: Return to Client: ________ Lab Disposal: ________

Received by Laboratory: Michelle Vluhammu Date/Time: 10/29/13 9:30 Signature:

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 8 of 10

Company Name: ARCADIS

Project Name, PWS, Permit, Etc.: Amendment Study Samples

Sample Origin State: NM

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address: Pam Pinson -Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Contact Name: Emily Schlenker

Phone/Fax: 303-231-9115 ext 114

Email: Emily.Schlenker@arcadis-us.com

Sampler: (Please Print) Matthew Barkley

Invoice Address: Pam Pinson- Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Invoice Contact & Phone: Pam Pinson 575-912-5213

Purchase Order:

Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW
☐ GSA
☐ POTW/WWTP
☐ State: ________
☐ Other: ________

☐ A2LA
☐ EDD/EDT(Electronic Data)
Format: ________
☐ LEVEL IV
☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'
Cooler#1 - 15.8
#2 - 15.2
#3 - 17.6
#4 - 14.0
#5 - 13.8
#6 - 14.6

H13110367

Shipped by: UPS NDA NDT

Cooler ID(s):

Receipt Temp ____ °C 1-2.6C 2-3.3C

On Ice: Yes [✓ No]

Custody Seal [✓ Y] N

Intact C [✓ Y] N

Signature Match [✓ Y] N

LABORATORY USE ONLY

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4
1 [redacted]			1 S	X	X
2 [redacted]			1 S	X	X
3 [redacted]			1 S	X	X
4 [redacted]			1 S	X	X
5 STS-AMD-2013F-NEREF1 0-6	10/23/13	1635	1 S	X	X
6 STS-AMD-2013F-NEREF2 (0-6)	10/23/13	1615	1 S	X	X
7 STS-AMD-2013F-NEREF1 (12-18)	10/23/13	1730	1 S	X	X
8 STS-AMD-2013F-NEREF2 (12-18)	10/23/13	1750	1 S	X	X
9 [redacted]			1 S	X	X
10 [redacted]			1 S	X	X

X

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson Date/Time: 10-25-13 2015 Signature: Pam Pinson

Received by (print): Date/Time: Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Skyler Pester Date/Time: 11-1-13 9:20Am Signature: *

Sample Disposal: Return to Client: ______ Lab Disposal: ______

Received by Laboratory: Michelle Kluhammer Date/Time: 10/29/13 9:30 Signature:

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 9 of 10

Company Name: ARCADIS	Project Name, PWS, Permit, Etc. Amendment Study Samples	Sample Origin State: NM	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Pam Pinson -Chino Mines Company P.O. Box 10 Bayard, NM 88023	Contact Name: Emily Schlenker Phone/Fax: 303-231-9115 ext 114	Email: Emily.Schlenker@arcadis-us.com	Sampler: (Please Print) Matthew Barkley
Invoice Address: Pam Pinson- Chino Mines Company P.O. Box 10 Bayard, NM 88023	Invoice Contact & Phone: Pam Pinson 575-912-5213	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: ________
- ☐ Other: ________
- ☐ A2LA
- ☐ EDD/EDT(Electronic Data)
- **Format:** ________
- ☐ LEVEL IV
- ☐ NELAC

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Only Measured pCU from ARCADIS-Table 4'

Cooler #1-15.8
#2-15.2
#3-17.6
#4-14.0 TM
#5-13.8
#6-14.6

H13110367

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX (Number of Containers / Sample Type: A W S V B O – Air Water Soils/Solids Vegetation Bioassay Other)	soil sieved to < 2mm	pCU from Arcadis-Table 4
1 [redacted]			1 S	☒	☒
2 [redacted]			1 S	☒	☒
3 [redacted]			1 S	☒	☒
4 [redacted]			1 S	☒	☒
5 [redacted]			1 S	☒	☒
6 [redacted]			1 S	☒	☒
7 [redacted]			1 S	☒	☒
8 [redacted]			1 S	☒	☒
9 [redacted]			1 S	☒	☒
10 [redacted]			1 S	☒	☒

Shipped by: UPS NDA NPT

Cooler ID(s):

Receipt Temp ______ °C 1-2.6C 2-3.3C

On Ice: Yes [✓ No]

Custody Seal [✓ Y] N
Intact C [✓ Y] N
Signature Match [✓ Y] N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson Date/Time: 10-28-13- 2015 Signature: Pam Pinson
Received by (print): Date/Time: Signature:

Relinquished by (print): Date/Time: Signature:
Received by (print): Skyler Vester Date/Time: 11-1-13 9:20Am Signature: *

Sample Disposal: Return to Client: ________ Lab Disposal: ________
Received by Laboratory: Michelle Kleehammer Date/Time: 10/29/13 9:30 Signature:

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Page 10 of 10

Company Name: ARCADIS
Project Name, PWS, Permit, Etc.: Amendment Study Samples
Sample Origin State: NM
EPA/State Compliance: Yes ☐ No ☐

Report Mail Address: Pam Pinson -Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Contact Name: Emily.Schlenker
Phone/Fax: 303-231-9115 ext 114
Email: Emily.Schlenker@arcadis-us.com
Sampler: (Please Print) Matthew Barkley

Invoice Address: Pam Pinson- Chino Mines Company
P.O. Box 10
Bayard, NM 88023

Invoice Contact & Phone: Pam Pinson 575-912-5213
Purchase Order:
Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: ______
- ☐ Other: ______
- ☐ A2LA
- ☐ EDD/EDT(Electronic Data)
- Format: ______
- ☐ LEVEL IV
- ☐ NELAC

ANALYSIS REQUESTED

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	soil sieved to < 2mm	pCU from Arcadis-Table 4								SEE ATTACHED	Normal Turnaround (TAT)	RUSH
1 [redacted]			1 S	X	X										
2 [redacted]			1 S	X	X										
3															
4															
5															
6															
7															
8															
9															
10															

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Only Measured pCU from ARCADIS-Table 4'

Cooler #1-15.8
#2-15.2
#3-17.6
#4-14.0 TB
#5-13.8
#6-14.6

H13110367

Shipped by: UPSNDA NPT
Cooler ID(s):
Receipt Temp ______ °C 1-2.6C 2-2.3C
On Ice: Yes [✓ No]
Custody Seal [✓ Y] N
Intact C [✓ Y] N
Signature Match [✓ Y] N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Pam Pinson Date/Time: 10-25-13 2013 Signature: Pam Pinson
Relinquished by (print): Date/Time: Signature:
Received by (print): Date/Time: Signature:
Received by (print): Skyler Yestes Date/Time: 11-1-13 9:20am Signature: Skyler Yestes*
Sample Disposal: Return to Client: ______ Lab Disposal: ______
Received by Laboratory: Michelle Kleehammer Date/Time: 10/29/13 9:30 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
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One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID		Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
WEST-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0402-01	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST-BOUTELOUA CURTIFPENDULA	NOT CLEANED	W3J0402-02	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST-PROSOPIS GRANDULOSA	NOT CLEANED	W3J0402-03	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST-PROSOPIS GRANDULOSA	CLEANED	W3J0402-04	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST-ARISTIDA PURPUREA	NOT CLEANED	W3J0402-05	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST-ARISTIDA PURPUREA	CLEANED	W3J0402-06	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST REF-BOUTELOUA CURTIFPENDULA	NOT CLEANED	W3J0402-07	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST REF-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0402-08	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST REF-PROSOPIS GRANDULOSA	NOT CLEANED	W3J0402-09	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST REF-PROSOPIS GRANDULOSA	CLEANED	W3J0402-10	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
WEST REF-ARISTIDA PURPUREA	CLEANED	W3J0402-11	Vegetation	08-Oct-13 12:00	DP	15-Oct-2013
NORTH-PROSOPIS GRANDULOSA	CLEANED	W3J0402-12	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH-PROSOPIS GRANDULOSA	NOT CLEANED	W3J0402-13	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH-PANICUM OBTUSUM	CLEANED	W3J0402-14	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH-PANICUM OBTUSUM	NOT CLEANED	W3J0402-15	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0402-16	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH REF-PROSOPIS GRANDULOSA	CLEANED	W3J0402-17	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH REF-PROSOPIS GRANDULOSA	NOT CLEANED	W3J0402-18	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH REF-PANICUM OBTUSUM	CLEANED	W3J0402-19	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH REF-PANICUM OBTUSUM	NOT CLEANED	W3J0402-20	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH REF-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0402-21	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013
NORTH REF-BOUTELOUA CURTIFPENDULA	NOT CLEANED	W3J0402-22	Vegetation	08-Oct-13 17:00	DP	15-Oct-2013

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested. Non-Detects are reported at the MDL.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0402-01 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	8.45	mg/kg	1.00	0.35		W344118	AS	10/29/13 17:38	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:C573

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST-BOUTELOUA CURTIFPENDULA : NOT CLEANED**
SVL Sample ID: **W3J0402-02 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	17.8	mg/kg	1.00	0.35		W344118	AS	10/29/13 17:47	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST-PROSOPIS GRANDULOSA : NOT CLEANED**
SVL Sample ID: **W3J0402-03 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	45.0	mg/kg	1.00	0.35		W344118	AS	10/29/13 17:49	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W3J0402**
Bayard, NM 88023	Reported: 30-Oct-13 11:42

Client Sample ID: **WEST-PROSOPIS GRANDULOSA : CLEANED**
SVL Sample ID: **W3J0402-04 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	41.1	mg/kg	1.00	0.35		W344118	AS	10/29/13 17:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST-ARISTIDA PURPUREA : NOT CLEANED**
SVL Sample ID: **W3J0402-05 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	49.4	mg/kg	1.00	0.35		W344118	AS	10/29/13 17:55	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST-ARISTIDA PURPUREA : CLEANED**
SVL Sample ID: **W3J0402-06 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	17.5	mg/kg	1.00	0.35		W344118	AS	10/29/13 17:58	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST REF-BOUTELOUA CURTIFPENDULA : NOT CLEANED**
SVL Sample ID: **W3J0402-07 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	16.4	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:06	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST REF-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0402-08 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	17.6	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:09	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **WEST REF-PROSOPIS GRANDULOSA : NOT CLEANED**
SVL Sample ID: **W3J0402-09 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	49.1	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:11	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W3J0402**
Bayard, NM 88023	Reported: 30-Oct-13 11:42

Client Sample ID: **WEST REF-PROSOPIS GRANDULOSA : CLEANED**
SVL Sample ID: **W3J0402-10 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	53.7	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:14	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W3J0402**
Bayard, NM 88023	Reported: 30-Oct-13 11:42

Client Sample ID: **WEST REF-ARISTIDA PURPUREA : CLEANED**
SVL Sample ID: **W3J0402-11 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 12:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	37.2	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:17	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH-PROSOPIS GRANDULOSA : CLEANED**
SVL Sample ID: **W3J0402-12 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	39.4	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:20	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:C573

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH-PROSOPIS GRANDULOSA : NOT CLEANED**
SVL Sample ID: **W3J0402-13 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	33.5	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:23	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W3J0402**
Bayard, NM 88023	Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH-PANICUM OBTUSUM : CLEANED**
SVL Sample ID: **W3J0402-14 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	19.8	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH-PANICUM OBTUSUM : NOT CLEANED**
SVL Sample ID: **W3J0402-15 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	16.1	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:28	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0402-16 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	6.91	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:31	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH REF-PROSOPIS GRANDULOSA : CLEANED**
SVL Sample ID: **W3J0402-17 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	39.7	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:39	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH REF-PROSOPIS GRANDULOSA : NOT CLEANED**
SVL Sample ID: **W3J0402-18 (Vegetation)**
Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	51.2	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:42	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W3J0402**
Bayard, NM 88023	Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH REF-PANICUM OBTUSUM : CLEANED**
SVL Sample ID: **W3J0402-19 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	12.3	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:45	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH REF-PANICUM OBTUSUM : NOT CLEANED**
SVL Sample ID: **W3J0402-20 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	14.2	mg/kg	1.00	0.35		W344118	AS	10/29/13 18:48	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH REF-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0402-21 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	20.1	mg/kg	1.00	0.35		W344117	TJK	10/29/13 16:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0402**
Reported: 30-Oct-13 11:42

Client Sample ID: **NORTH REF-BOUTELOUA CURTIFPENDULA : NOT CLEANED**
SVL Sample ID: **W3J0402-22 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 08-Oct-13 17:00
Received: 15-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	14.4	mg/kg	1.00	0.35		W344117	TJK	10/29/13 16:24	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	<1.00	0.35	1.00	W344117	29-Oct-13	
EPA 6010B	Copper	mg/kg	<1.00	0.35	1.00	W344118	29-Oct-13	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	104	100	104	80 - 120	W344117	29-Oct-13	
EPA 6010B	Copper	mg/kg	99.9	100	99.9	80 - 120	W344118	29-Oct-13	

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	118	20.4	100	97.8	75 - 125	W344117	29-Oct-13	
EPA 6010B	Copper	mg/kg	110	8.45	100	101	75 - 125	W344118	29-Oct-13	

Quality Control - MATRIX SPIKE DUPLICATE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	118	118	100	0.2	20	W344117	29-Oct-13	
EPA 6010B	Copper	mg/kg	117	110	100	6.4	20	W344118	29-Oct-13	

Notes and Definitions

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

curt = curtitpendula

W3J0402

CHAIN OF CUSTODY RECORD

Page 1 of 2

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB #
TEMP on Receipt 17.6°C

Report to Company: ARCADIS
Contact: Emily Schlenker
Address: 11087 Cole Blvd Suite 200
Lakewood CO 80127
Phone Number: 303-231-9115 ext. 114
FAX Number:
E-mail: Emily.Schlenker@Arcadis-US.com

Invoice Sent To: Chino Mines
Contact: Pam Pinson
Address: P.O. Box 10
Bayard NM 88023
Phone Number: 575-912-5213
FAX Number:
PO#:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other: live plants

Project Name: Chino Mines Amendment Study
Sampler's Signature:

Indicate State of sample origination: NEW MEXICO USACE? ☐ Yes ☒ No

Sample ID — Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO₃ Filtered	HNO₃ Unfiltered	HCl	H₂SO₄	NaOH	Other (Specify)	Copper (Cu)	Rush Instructions (Days)	Comments
1	West - Bouteloua curtitpendula	10/8	12pm	DP		1								X		Cleaned
2	West - Bouteloua curtitpendula	10/8	12pm	DP		1								X		Not Cleaned
3	West - Prosopis glandulosa	10/8	12	DP		1								X		Not Cleaned
4	West - Prosopis glandulosa	10/8	12	DP		1								X		Cleaned
5	West - Aristida purpurea	10/8	12	DP		1								X		Not cleaned
6	West - Aristida purpurea	10/8	12	DP		1								X		Cleaned
7	~~West~~ West let - Bouteloua curt.	10/8	12	DP		1								X		Not Cleaned
8	~~West~~ West let - Bouteloua. curt.	10/8	12	DP		1								X		Cleaned
9	West let - Prosopis glandulosa	"	"	"		"								X		Not Cleaned
10	West let - Prosopis glandulosa	"	"	"		"								X		Cleaned

Relinquished by: DOUG PARTRIDGE Date: 10/10/13 Time: 5 PM Received by: Date: 10/13/13 Time: 14:00
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC

Note: Please send electronic reporting to Emily Schenker (ARCADIS), and hard copy reporting to Pam Pinson. Standard Report is sufficient. Thx

W3J0402

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 17.1°C

CHAIN OF CUSTODY RECORD

Page 2 of 2

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Report to Company: ARCADIS
Contact: Emily Schlenker
Address: 1687 Cole Blvd Suite 200
Lakewood CO 80127
Phone Number: 303-231-9115 ext 114
FAX Number:
E-mail: Emily.Schlenker@Arcadis-US.com

Invoice Sent To: Chino Mines
Contact: Pam Pinson
Address: P.O Box 10
Bayard NM 88023
Phone Number: 575-912-5213
FAX Number:
PO#:

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other live plants

Project Name: Chino Mines Amendment Study
Sampler's Signature:

Indicate State of sample origination: NEW MEXICO USACE? ☐ Yes ☒ No

Sample ID — Please take care to distinguish between:
1 and I
2 and Z
5 and S
0 and O
Thanks!

Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Analyses Required: Copper (w)	Rush Instructions (Days)	Comments
11 West ref- Aristida purp.	10/8	12pm	DP		1										Cleaned
12 North- Prosopis glandulosa	"	5pm	DP		1										Cleaned
13 North Prosopis glandulosa	"	5pm	DP		1										Not Cleaned
14 North- Panicum obtusum	"	5pm	DP		1										Cleaned
15 North- Panicum obtusum	"	5pm	DP		1										Not Cleaned
16 North- Bouteloua curtipendula	"	5pm	DP		1										Cleaned
~~17 North Bouteloua curtipendula~~	"	5pm	DP		1										Not Cleaned
18 North ref. - Prosopis glandulosa	"	"	DP		1										Cleaned
18 N. ref - Prosopis glandulosa	"	"	DP		1										Not Cleaned
19 N. ref. Panicum obtusum	"	"	DP		1										Cleaned

Relinquished by: DOUG PARTRIDGE	Date: 10/10/13	Time: 5pm	Received by:	Date: 10/15/13	Time: 14:00
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC

W3J0402

SVL ANALYTICAL

CHAIN OF CUSTODY RECORD

Page 1 of 2

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB #
TEMP on Receipt 17.6°C

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other live plants

Report to Company: ARCADIS
Contact: Emily Schlenker
Address: 11087 Cole Blvd Suite 200
Lakewood CO 80127
Phone Number: 303-231-9115 ext. 114
FAX Number:
E-mail: Emily.Schlenker@Arcadis-US.com

Invoice Sent To: Chino Mines
Contact: Pam Pinson
Address: P.O. Box 10
Bayard NM 88023
Phone Number: 575-912-5213
FAX Number:
PO#:

Project Name: Chino Mines Amendment Study
Sampler's Signature:

Indicate State of sample origination: NEW MEXICO USACE? ☐ Yes ☒ No

Sample ID: Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO$_3$ Filtered	HNO$_3$ Unfiltered	HCl	H$_2$SO$_4$	NaOH	Other (Specify)	Copper (Cu)	Rush Instructions (Days)	Comments
20	N.Ref.-[illegible]	10/10	5pm	DP		1								X		Not Cleaned
21	N.Ref.-[illegible] curtipendula	10/10	5pm	DP		1								X		Cleaned
22	N.Ref-[illegible] curti.pendula	10/10	5pm	DP		1								X		Not Cleaned
23														X		
24														X		
25														X		
26														X		
27														X		
28														X		
29														X		

Relinquished by: DOUG PARTRIDGE Date: 10/10/13 Time: 5PM Received by: Date: 10/15/13 Time: 14:00
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

Note: Please send electronic reporting to Emily Schlenker (ARCADIS), and hard copy reporting to Pam Pinson. Standard Report is sufficient. Thanks

W3J0402

Inventory - Sent October 11, 2013

1	Bouteloua curtifpendula	8-Oct	West	Cleaned
2	Bouteloua curtifpendula	8-Oct	West	Not Cleaned
3	Prosopis grandulosa	8-Oct	West	Not Cleaned
4	Prosopis grandulosa	8-Oct	West	Cleaned
5	Aristida purpurea	8-Oct	West	Not Cleaned
6	Aristida purpurea	8-Oct	West	Cleaned
7	Bouteloua curtifpendula	8-Oct	West Ref	Not Cleaned
8	Bouteloua curtifpendula	8-Oct	West Ref	Cleaned
9	Prosopis grandulosa	8-Oct	West Ref	Not Cleaned
10	Prosopis grandulosa	8-Oct	West Ref	Cleaned
11	Aristida purpurea	8-Oct	West Ref	Cleaned
12	Prosopis grandulosa	8-Oct	North	Cleaned
13	Prosopis grandulosa	8-Oct	North	Not Cleaned
14	Panicum obtusum	8-Oct	North	Cleaned
15	Panicum obtusum	8-Oct	North	Not Cleaned
16	Bouteloua curtifpendula	8-Oct	North	Cleaned
17	Prosopis grandulosa	8-Oct	North Ref	Cleaned
18	Prosopis grandulosa	8-Oct	North Ref	Not Cleaned
19	Panicum obtusum	8-Oct	North Ref	Cleaned
20	Panicum obtusum	8-Oct	North Ref	Not Cleaned
21	Bouteloua curtifpendula	8-Oct	North Ref	Cleaned
22	Bouteloua curtifpendula	8-Oct	North Ref	Not Cleaned

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10/15/13 By:

SVL Work No: W3J0402

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				FMI-CHINO
2	Date and time of receipt at lab	✓				10/15/13 14:00
3	Received by	✓				C. FLORES
4	Temperature blank or cooler temperature				✓	CF 10/16/13 Temp. ~~NA~~ °C. 17.6°C
5	Were the sample(s) received on ice				✓	NO-RECV'D IN A BOX
6	Custody tape/bottle seals				✓	
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				GOOD
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				TIME & DATE NOT SHOWN ON SAMPLE
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested				✓	SOLIDS
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)				✓	
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill	✓				

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: ______

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID		Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
NE REF-BOUTELOUA CURTIFPENDULA	UNCLEANED	W3J0405-01	Vegetation	10-Oct-13 10:35	CM	16-Oct-2013
NE REF-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0405-02	Vegetation	10-Oct-13 10:35	CM	16-Oct-2013
NE REF-PROSOPIS GLANDULOSA	UNCLEANED	W3J0405-03	Vegetation	10-Oct-13 11:00	CM	16-Oct-2013
NE REF-PROSOPIS GLANDULOSA	CLEANED	W3J0405-04	Vegetation	10-Oct-13 11:00	DP	16-Oct-2013
NE REF-PANICUM OBTUSUM	CLEANED	W3J0405-05	Vegetation	10-Oct-13 11:00	CM	16-Oct-2013
NE REF-PANICUM OBTUSUM	UNCLEANED	W3J0405-06	Vegetation	10-Oct-13 11:00	CM	16-Oct-2013
NE-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0405-07	Vegetation	10-Oct-13 09:50	CM	16-Oct-2013
NE-PROSOPIS GLANDULOSA	UNCLEANED	W3J0405-08	Vegetation	10-Oct-13 09:20	CM	16-Oct-2013
NE-PROSOPIS GLANDULOSA	CLEANED	W3J0405-09	Vegetation	10-Oct-13 09:20	CM	16-Oct-2013
NE-PANICUM OBTUSUM	UNCLEANED	W3J0405-10	Vegetation	10-Oct-13 10:05	CM	16-Oct-2013
NE-PANICUM OBTUSUM	CLEANED	W3J0405-11	Vegetation	10-Oct-13 10:05	CM	16-Oct-2013
EAST REF-VERBESINA ENCELIOIDES	UNCLEANED	W3J0405-12	Vegetation	10-Oct-13 14:00	DJP	16-Oct-2013
EAST REF-VERBESINA ENCELIOIDES	CLEANED	W3J0405-13	Vegetation	10-Oct-13 14:00	DJP	16-Oct-2013
EAST-VERBESINA ENCELIOIDES	UNCLEANED	W3J0405-14	Vegetation	10-Oct-13 14:00	DJP	16-Oct-2013
EAST-VERBESINA ENCELIOIDES	CLEANED	W3J0405-15	Vegetation	10-Oct-13 14:00	DJP	16-Oct-2013
EAST-PROSOPIS GLANDULOSA	UNCLEANED	W3J0405-16	Vegetation	10-Oct-13 13:00	PP	16-Oct-2013
EAST-PROSOPIS GLANDULOSA	CLEANED	W3J0405-17	Vegetation	10-Oct-13 13:00	PP	16-Oct-2013
EAST REF-PROSOPIS GLANDULOSA	UNCLEANED	W3J0405-18	Vegetation	10-Oct-13 13:00	PP	16-Oct-2013
EAST REF-PROSOPIS GLANDULOSA	CLEANED	W3J0405-19	Vegetation	10-Oct-13 13:00	PP	16-Oct-2013
EAST REF-SETARIA VIRIDIS	UNCLEANED	W3J0405-20	Vegetation	10-Oct-13 14:00	DP	16-Oct-2013
EAST REF-SETARIA VIRIDIS	CLEANED	W3J0405-21	Vegetation	10-Oct-13 14:00	DP	16-Oct-2013
EAST-SETARIA VIRIDIS	UNCLEANED	W3J0405-22	Vegetation	10-Oct-13 14:00	DP	16-Oct-2013
EAST-SETARIA VIRIDIS	CLEANED	W3J0405-23	Vegetation	10-Oct-13 14:00	DP	16-Oct-2013
EAST-BOUTELOUA CURTIFPENDULA	CLEANED	W3J0405-24	Vegetation	10-Oct-13 14:00	DP	16-Oct-2013
EAST-PANICUM OBTUSUM	CLEANED	W3J0405-25	Vegetation	10-Oct-13 14:00	DP	16-Oct-2013

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested. Non-Detects are reported at the MDL.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE REF-BOUTELOUA CURTIFPENDULA : UNCLEANED**
SVL Sample ID: **W3J0405-01 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 10:35
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	32.8	mg/kg	1.00	0.35		W344134	TJK	10/30/13 14:46	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE REF-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0405-02 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 10:35
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	25.1	mg/kg	1.00	0.35		W344134	TJK	10/30/13 14:54	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE REF-PROSOPIS GLANDULOSA : UNCLEANED**
SVL Sample ID: **W3J0405-03 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 11:00
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	41.0	mg/kg	1.00	0.35		W344134	TJK	10/30/13 14:57	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:C573

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE REF-PROSOPIS GLANDULOSA : CLEANED**
SVL Sample ID: **W3J0405-04 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 11:00
Received: 16-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	45.8	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE REF-PANICUM OBTUSUM : CLEANED**
SVL Sample ID: **W3J0405-05 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 11:00
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	30.5	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:02	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE REF-PANICUM OBTUSUM : UNCLEANED**
SVL Sample ID: **W3J0405-06 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 11:00
Received: 16-Oct-13
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	31.9	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:05	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0405-07 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 09:50
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	33.3	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:14	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE-PROSOPIS GLANDULOSA : UNCLEANED**
SVL Sample ID: **W3J0405-08 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 09:20
Received: 16-Oct-13
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	56.4	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:16	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE-PROSOPIS GLANDULOSA : CLEANED**
SVL Sample ID: **W3J0405-09 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 09:20
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	51.5	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:19	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE-PANICUM OBTUSUM : UNCLEANED**
SVL Sample ID: **W3J0405-10 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 10:05
Received: 16-Oct-13
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	31.9	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:22	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **NE-PANICUM OBTUSUM : CLEANED**
SVL Sample ID: **W3J0405-11 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 10:05
Received: 16-Oct-13
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	16.2	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST REF-VERBESINA ENCELIOIDES : UNCLEANED**
SVL Sample ID: **W3J0405-12 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DJP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	32.8	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:27	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST REF-VERBESINA ENCELIOIDES : CLEANED**
SVL Sample ID: **W3J0405-13 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DJP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	29.7	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:30	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:C573

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-VERBESINA ENCELIOIDES : UNCLEANED**
SVL Sample ID: **W3J0405-14 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DJP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	21.2	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:33	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-VERBESINA ENCELIOIDES : CLEANED**
SVL Sample ID: **W3J0405-15 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DJP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	22.4	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:36	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-PROSOPIS GLANDULOSA : UNCLEANED**
SVL Sample ID: **W3J0405-16 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 13:00
Received: 16-Oct-13
Sampled By: PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	38.4	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:38	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-PROSOPIS GLANDULOSA : CLEANED**
SVL Sample ID: **W3J0405-17 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 13:00
Received: 16-Oct-13
Sampled By: PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	37.7	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:47	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W3J0405**
Bayard, NM 88023	Reported: 31-Oct-13 09:53

Client Sample ID: **EAST REF-PROSOPIS GLANDULOSA : UNCLEANED**

SVL Sample ID: **W3J0405-18 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 13:00
Received: 16-Oct-13
Sampled By: PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	42.5	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST REF-PROSOPIS GLANDULOSA : CLEANED**
SVL Sample ID: **W3J0405-19 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 13:00
Received: 16-Oct-13
Sampled By: PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	71.4	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST REF-SETARIA VIRIDIS : UNCLEANED**
SVL Sample ID: **W3J0405-20 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	22.8	mg/kg	1.00	0.35		W344134	TJK	10/30/13 15:55	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:C573

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST REF-SETARIA VIRIDIS : CLEANED**
SVL Sample ID: **W3J0405-21 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	19.0	mg/kg	1.00	0.35		W344138	TJK	10/30/13 14:37	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-SETARIA VIRIDIS : UNCLEANED**
SVL Sample ID: **W3J0405-22 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	12.3	mg/kg	1.00	0.35		W344138	TJK	10/30/13 15:02	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:C573

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-SETARIA VIRIDIS : CLEANED**
SVL Sample ID: **W3J0405-23 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	9.88	mg/kg	1.00	0.35		W344138	TJK	10/30/13 15:07	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-BOUTELOUA CURTIFPENDULA : CLEANED**
SVL Sample ID: **W3J0405-24 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	7.02	mg/kg	1.00	0.35		W344138	TJK	10/30/13 15:24	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Client Sample ID: **EAST-PANICUM OBTUSUM : CLEANED**
SVL Sample ID: **W3J0405-25 (Vegetation)**

Sample Report Page 1 of 1

Sampled: 10-Oct-13 14:00
Received: 16-Oct-13
Sampled By: DP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	14.3	mg/kg	1.00	0.35		W344138	TJK	10/30/13 15:29	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray

Kirby Gray
Technical Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W3J0405**
Reported: 31-Oct-13 09:53

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	<1.00	0.35	1.00	W344134	30-Oct-13	
EPA 6010B	Copper	mg/kg	<1.00	0.35	1.00	W344138	30-Oct-13	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	101	100	101	80 - 120	W344138	30-Oct-13	
EPA 6010B	Copper	mg/kg	106	100	106	80 - 120	W344134	30-Oct-13	

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	123	19.0	100	104	75 - 125	W344138	30-Oct-13	
EPA 6010B	Copper	mg/kg	144	32.8	100	111	75 - 125	W344134	30-Oct-13	

Quality Control - MATRIX SPIKE DUPLICATE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	143	144	100	0.2	20	W344134	30-Oct-13	
EPA 6010B	Copper	mg/kg	124	123	100	0.9	20	W344138	30-Oct-13	

Notes and Definitions

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

W3J0405

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 16.8°C

Page 1 of 3

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Report to Company: ARCADIS
Contact: EMILY Schlenker
Address: 1687 Cole Blvd. Suite 200
Lakewood CO 80127
Phone Number: 303-231-9115 ext 114
FAX Number:
E-mail: emily.schlenker@arcadis-us.com

Invoice Sent To: Chino Mines
Contact: Pam Linson
Address: PO Box 10
Bayard NM 88023
Phone Number: 575 912 5213
FAX Number:
PO#:

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other Plants

Project Name: Chino Mines Amendment Study
Sampler's Signature:

Indicate State of sample origination: NM

USACE? ☐ Yes ☐ No

Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO3 Filtered	HNO3 Unfiltered	HCl	H2SO4	NaOH	Other (Specify)	Analyses Required: Copper (Cu)	Rush Instructions (Days)	Comments
1	1. Bouteloua curtipendula	10/10/13	10:35	CM	7	1								X		NE Ref - Uncleaned
2	2. Bouteloua curtipendula	10/10/13	10:35	CM	7	1								X		NE Ref - Cleaned
3	3. Prosopis glandulosa	10/10/13	11 am	CM	7	1								X		NE Ref - Uncleaned
4	4. Prosopis glandulosa	10/10/13	11 am	DP	7	1								X		NE Ref - Cleaned
5	5. Panicum obtusum	10/10/13	11am	CM	7	1								X		NE Ref - Cleaned
6	6. Panicum obtusum	10/10/13	11am	CM	7	1								X		NE Ref - Uncleaned
7	7. Bouteloua curtipendula	10/10/13	9:50	CM	7	1								X		NE - Cleaned
8	8. Prosopis glandulosa	10/10/13	9:20	CM	7	1								X		NE - Uncleaned
9	9. Prosopis glandulosa	10/10/13	9:20	CM	7	1								X		NE - Cleaned
10	10. Panicum obtusum	10/10/13	10:05	CM	7	1								X		NE - Uncleaned

Relinquished by: Doug Partridge	Date: 10/15/13	Time: 4 pm	Received by: C. Flores	Date: 10/16/13	Time: 14:30
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

W3J0405

FOR SVL USE ONLY
SVL JOB #
TEMP on Receipt: 16.8°C

SVL ANALYTICAL

Page 2 of 3

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Report to Company: ARCADIS
Contact: Emily Schlenker
Address: 1687 Cole Blvd Suite 300
Lakewood CO 80127
Phone Number: 303.231.9115 x114
FAX Number:
E-mail: emily.schlenker@arcadis-us.com

Invoice Sent To: Chino Mines
Contact: Pam Pinson
Address: PO Box 10
Bayard NM 88023
Phone Number: 575.912.5213
FAX Number:
PO#:

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other Plants

Project Name: Chino Mines Amendment Study
Sampler's Signature:

Indicate State of sample origination: NM **USACE?** ☐ Yes ☐ No

Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO₃ Filtered	HNO₃ Unfiltered	HCl	H₂SO₄	NaOH	Other (Specify)	Copper (Cu)	Rush Instructions (Days)	Comments
1	11. Panicum obtusum	10/10/13	6:05	CM	7	1								X		NE - Cleaned
2	12. Verbesina encelioides	10/10/13	2pm	DJP	7	1								X		EAST Ref - Uncleaned
3	13. Verbesina encelioides	10/10/13	2pm	DJP	7	1								X		East Ref - Cleaned
4	14. Verbesina encelioides	10/10/13	2pm	DJP	7	1								X		EAST - Uncleaned
5	15. Verbesina encelioides	10/10/13	2PM	DJP	7	1								X		EAST - Cleaned
6	16 Prosopis glandulosa	10/10/13	1PM	PP	7	1								X		EAST - Uncleaned
7	17 Prosopis glandulosa	10/10/13	1PM	PP	7	1								X		EAST - Cleaned
8	18 Prosopis glandulosa	10/10/13	1PM	PP	7	1								X		EAST REF - Uncleaned
9	19 Prosopis glandulosa	10/10/13	1PM	PP	7	1								X		EAST REF - Cleaned
10																

Relinquished by: Dan PARTRIDGE	Date: 10/15/13	Time: 4 pm	Received by: D Flores	Date: 10/16/13	Time: 14:30
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

W3J0405

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 16.8°C

Page 3 of 3

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Report to Company: ARCADIS
Contact: Emily Schlenker
Address: 1687 Cole Blvd Suite 200
Lakewood CO 80127
Phone Number: 303.231.9119 114
FAX Number:
E-mail: emily.schlenker@arcadis-us.com

Invoice Sent To: Chino Mines
Contact: Pam Pinson
Address: PO Box 10
Bayard NM 88023
Phone Number: 575 912 5213
FAX Number:
PO#:

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other Plants

Project Name: Chino Mines Amendment Study
Sampler's Signature:

Indicate State of sample origination: NM

USACE? ☐ Yes ☐ No

Sample ID — Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO$_3$ Filtered	HNO$_3$ Unfiltered	HCl	H$_2$SO$_4$	NaOH	Other (Specify)	Copper (Cu)	Rush Instructions (Days)	Comments
1	20 Setaria viridis	10/10/13	2pm	DP	7	1								X		EAST REF - Uncleaned
2	21 Setaria viridis	10/10/13	2pm	DP	7	1								X		EAST REF - Cleaned
3	22 Setaria viridis	10/10/13	2pm	DP	7	1								X		EAST - Uncleaned
4	23. Setaria viridis	10/10/13	2pm	DP	7	1								X		EAST Cleaned
5	24. Bouteloua curtipendula	10/10/13	2pm	DP	7	1								X		EAST - Cleaned
6	25. Panicum obtusum	10/10/13	2pm	DP	7	1								X		EAST - Cleaned
7																
8																
9																
10																

Relinquished by: Day Partridge	Date: 10/15/13	Time: 4pm	Received by: C Flores	Date: 10/16/13	Time: 14:30
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

W3J0405

Inventory - Sent October 15, 2013

1	Bouteloua curtifpendula	10-Oct	NE Ref	Uncleaned
2	Bouteloua curtifpendula	10-Oct	NE Ref	Cleaned
3	Prosopis glandulosa	10-Oct	NE Ref	Uncleaned
4	Prosopis glandulosa	10-Oct	NE Ref	Cleaned
5	Panicum obtusum	10-Oct	NE Ref	Cleaned
6	Panicum obtusum	10-Oct	NE Ref	Uncleaned
7	Bouteloua curtifpendula	10-Oct	NE	Cleaned
8	Prosopis glandulosa	10-Oct	NE	Uncleaned
9	Prosopis glandulosa	10-Oct	NE	Cleaned
10	Panicum obtusum	10-Oct	NE	Uncleaned
11	Panicum obtusum	10-Oct	NE	Cleaned
12	*Verbesina encelioides*	10-Oct	East Ref	*Uncleaned*
13	Verbesina encelioides	10-Oct	East Ref	Cleaned
14	Verbesina encelioides	10-Oct	East	Uncleaned
15	Verbesina encelioides	10-Oct	East	Cleaned
16	Prosopis glandulosa	10-Oct	East	Uncleaned
17	Prosopis glandulosa	10-Oct	East	Cleaned
18	Prosopis glandulosa	10-Oct	East Ref	Uncleaned
19	Prosopis glandulosa	10-Oct	East Ref	Cleaned
20	Setaria viridis	10-Oct	East Ref	Uncleaned
21	Setaria viridis	10-Oct	East REf	Cleaned
22	Setaria viridis	10-Oct	East	Uncleaned
23	Setaria viridis	10-Oct	East	Cleaned
24	Bouteloua curtifpendula	10-Oct	East	Cleaned
25	Panicum obtusum	10-Oct	East	Cleaned

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10/16/13 By: C Perry

SVL Work No: W3J0405

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				FMI-CHINO
2	Date and time of receipt at lab	✓				10/16/13 14:30
3	Received by	✓				**C. FLORES**
4	Temperature blank or cooler temperature				✓	CF 10/16/13 Temp. ~~N/A~~ °C. 16.8°C
5	Were the sample(s) received on ice				✓	NO - SAMPLES REC'D IN A BOX
6	Custody tape/bottle seals				✓	NO
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				GOOD
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				TIME + DATE NOT SHOWN ON SAMPLE
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested				✓	SOLID
12	Did an SVL employee preserve sample(s) upon receipt				✓	NO
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)				✓	
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill	✓				

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: ______________________

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

May 23, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley, Sheri Fling

Project ID: ZN023C
ACZ Project ID: L94282

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 30, 2012. This project has been assigned to ACZ's project number, L94282. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L94282. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 23, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94282-01***
Sample ID:	STS-AMD-2012S-EREF5	Date Sampled:	*04/24/12 17:40*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 11:10	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.07			mg/L	0.01	0.05	05/19/12 18:27	jjc
Copper, total (3050)	M6010B ICP	1200		*	mg/Kg	1	5	05/17/12 13:56	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	05/16/12 15:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	94.6		*	%	0.1	0.5	05/17/12 10:40	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:00	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 11:39	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 11:00	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:00	ndj
Synthetic Precip. Leaching Procedure	M1312							05/16/12 20:06	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94282-02***
Sample ID:	STS-AMD-2012S-EREF6	Date Sampled:	*04/24/12 17:45*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 11:49	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.13			mg/L	0.01	0.05	05/19/12 18:36	jjc
Copper, total (3050)	M6010B ICP	1740		*	mg/Kg	1	5	05/17/12 14:05	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	05/16/12 17:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	94.5		*	%	0.1	0.5	05/17/12 11:50	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:06	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 14:33	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 11:18	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:06	ndj
Synthetic Precip. Leaching Procedure	M1312							05/16/12 22:29	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN023C
Sample ID: STS-AMD-2012S-EREF7

ACZ Sample ID: ***L94282-03***
Date Sampled: *04/24/12 17:35*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 12:14	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.24			mg/L	0.01	0.05	05/19/12 18:42	jjc
Copper, total (3050)	M6010B ICP	1370		*	mg/Kg	1	5	05/17/12 14:08	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.6		*	units	0.1	0.1	05/16/12 18:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	97.1		*	%	0.1	0.5	05/17/12 13:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:12	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 15:31	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 11:27	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:12	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 0:05	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94282-04***
Sample ID:	STS-AMD-2012S-EREF8	Date Sampled:	*04/24/12 17:50*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 12:27	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.12			mg/L	0.01	0.05	05/19/12 18:45	jjc
Copper, total (3050)	M6010B ICP	1190		*	mg/Kg	1	5	05/17/12 14:14	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.7		*	units	0.1	0.1	05/16/12 19:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	95.7		*	%	0.1	0.5	05/17/12 14:10	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:18	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 16:30	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 11:36	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:18	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 0:53	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-05***
Project ID:	ZN023C	Date Sampled:	*04/25/12 15:00*
Sample ID:	STS-AMD-2012S-NREF1	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 11:56	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 12:40	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10200			mg/Kg	20	100	05/17/12 14:24	aeb
Copper (1312)	M6010B ICP	0.03	B		mg/L	0.01	0.05	05/19/12 18:57	jjc
Copper, total (3050)	M6010B ICP	168		*	mg/Kg	1	5	05/17/12 14:24	aeb
Potassium, total (3050)	M6010B ICP	2640			mg/Kg	30	200	05/17/12 14:24	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.2		*	units	0.1	0.1	05/16/12 20:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	95.8		*	%	0.1	0.5	05/17/12 15:20	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:25	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 17:28	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 11:45	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:25	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 8:25	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 1:40	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 12:20	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.1	B		mg/Kg	0.1	0.5	05/22/12 13:31	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.4	B	*	mg/Kg	0.1	0.5	05/16/12 23:59	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.27	B	*	mg/Kg	0.05	0.3	05/16/12 23:59	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.4	B	*	mg/Kg	0.3	3	05/18/12 11:53	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.079		*	%	0.002	0.009	05/12/12 14:18	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NREF2

ACZ Sample ID: ***L94282-06***
Date Sampled: *04/25/12 15:25*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 12:15	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 12:53	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7340			mg/Kg	20	100	05/17/12 14:27	aeb
Copper (1312)	M6010B ICP	0.06			mg/L	0.01	0.05	05/19/12 19:00	jjc
Copper, total (3050)	M6010B ICP	372		*	mg/Kg	1	5	05/17/12 14:27	aeb
Potassium, total (3050)	M6010B ICP	2090			mg/Kg	30	200	05/17/12 14:27	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.0		*	units	0.1	0.1	05/16/12 21:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	97.4		*	%	0.1	0.5	05/17/12 16:30	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:31	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 18:26	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 11:54	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:31	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 8:31	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 3:16	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 13:02	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.8			mg/Kg	0.1	0.5	05/22/12 13:31	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.0		*	mg/Kg	0.1	0.5	05/17/12 0:01	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.24	B	*	mg/Kg	0.05	0.3	05/17/12 0:01	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.4	B	*	mg/Kg	0.3	3	05/18/12 11:55	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.039		*	%	0.002	0.008	05/12/12 14:19	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-07***
Project ID:	ZN023C	Date Sampled:	*04/25/12 15:15*
Sample ID:	STS-AMD-2012S-NREF1	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 12:35	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 13:05	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9430			mg/Kg	20	100	05/17/12 14:30	aeb
Copper (1312)	M6010B ICP	0.06			mg/L	0.01	0.05	05/19/12 19:04	jjc
Copper, total (3050)	M6010B ICP	33		*	mg/Kg	1	5	05/17/12 14:30	aeb
Potassium, total (3050)	M6010B ICP	2490			mg/Kg	30	200	05/17/12 14:30	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/16/12 22:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	90.1		*	%	0.1	0.5	05/17/12 17:40	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:37	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 19:24	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:03	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:37	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 8:37	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 4:04	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 13:23	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.1			mg/Kg	0.1	0.5	05/22/12 13:31	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	8.2		*	mg/Kg	0.1	0.5	05/17/12 0:04	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	05/17/12 0:04	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/18/12 11:57	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.040		*	%	0.002	0.01	05/12/12 14:21	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-08***
Project ID:	ZN023C	Date Sampled:	*04/25/12 15:40*
Sample ID:	STS-AMD-2012S-NREF2	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 12:54	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 13:18	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	14100			mg/Kg	20	100	05/17/12 14:33	aeb
Copper (1312)	M6010B ICP	0.03	B		mg/L	0.01	0.05	05/19/12 19:07	jjc
Copper, total (3050)	M6010B ICP	69		*	mg/Kg	1	5	05/17/12 14:33	aeb
Potassium, total (3050)	M6010B ICP	3560			mg/Kg	30	200	05/17/12 14:33	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.5		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	05/16/12 23:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	83.2		*	%	0.1	0.5	05/17/12 18:50	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:44	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 20:22	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:12	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:44	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 8:44	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 4:51	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 13:43	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.4			mg/Kg	0.1	0.5	05/22/12 13:31	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.5		*	mg/Kg	0.1	0.5	05/17/12 0:05	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.09	B	*	mg/Kg	0.05	0.3	05/17/12 0:05	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/18/12 11:58	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.046		*	%	0.002	0.01	05/12/12 14:22	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94282-09***
Sample ID:	STS-AMD-2012S-NREF3	Date Sampled:	*04/25/12 15:05*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 13:31	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.22			mg/L	0.01	0.05	05/19/12 19:10	jjc
Copper, total (3050)	M6010B ICP	952		*	mg/Kg	1	5	05/17/12 14:36	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.4		*	units	0.1	0.1	05/17/12 0:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	94.5		*	%	0.1	0.5	05/17/12 20:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:50	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 21:20	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:21	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:50	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 5:39	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NREF4

ACZ Sample ID: ***L94282-10***
Date Sampled: *04/25/12 15:00*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 13:44	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.38			mg/L	0.01	0.05	05/19/12 19:13	jjc
Copper, total (3050)	M6010B ICP	1640		*	mg/Kg	1	5	05/17/12 14:39	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	05/17/12 2:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	98.0		*	%	0.1	0.5	05/17/12 21:10	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 9:56	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 22:18	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:30	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 8:56	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 6:27	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-11***
Project ID:	ZN023C	Date Sampled:	*04/25/12 15:10*
Sample ID:	STS-AMD-2012S-NREF5	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 13:57	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.08			mg/L	0.01	0.05	05/19/12 19:16	jjc
Copper, total (3050)	M6010B ICP	891		*	mg/Kg	1	5	05/17/12 14:42	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.1		*	units	0.1	0.1	05/17/12 3:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	97.9		*	%	0.1	0.5	05/17/12 22:20	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:03	ndj
Digestion - Hot Plate	M3050B ICP							05/16/12 23:17	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:39	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:03	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 7:15	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NREF6

ACZ Sample ID: ***L94282-12***
Date Sampled: *04/25/12 15:30*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 14:09	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.17			mg/L	0.01	0.05	05/19/12 19:19	jjc
Copper, total (3050)	M6010B ICP	1280		*	mg/Kg	1	5	05/17/12 14:45	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	05/17/12 4:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	96.5		*	%	0.1	0.5	05/17/12 23:30	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:09	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 0:15	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:48	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:09	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 8:02	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-13***
Project ID:	ZN023C	Date Sampled:	*04/25/12 15:20*
Sample ID:	STS-AMD-2012S-NREF7	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 14:22	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.40			mg/L	0.01	0.05	05/19/12 19:22	jjc
Copper, total (3050)	M6010B ICP	2000		*	mg/Kg	1	5	05/17/12 14:48	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.9		*	units	0.1	0.1	05/17/12 5:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	97.3		*	%	0.1	0.5	05/18/12 0:40	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:15	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 1:13	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 12:57	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:15	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 8:50	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NREF8

ACZ Sample ID: ***L94282-14***
Date Sampled: *04/25/12 15:35*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 14:35	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.28			mg/L	0.01	0.05	05/19/12 19:25	jjc
Copper, total (3050)	M6010B ICP	1580		*	mg/Kg	1	5	05/17/12 14:52	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.3		*	units	0.1	0.1	05/17/12 6:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	97.6		*	%	0.1	0.5	05/18/12 1:50	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:22	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 2:11	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 13:06	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:22	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 9:38	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NEREF1

ACZ Sample ID: ***L94282-15***
Date Sampled: *04/25/12 11:10*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 13:14	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 14:48	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4170			mg/Kg	20	100	05/17/12 15:01	aeb
Copper (1312)	M6010B ICP	0.66			mg/L	0.01	0.05	05/19/12 19:34	jjc
Copper, total (3050)	M6010B ICP	3720		*	mg/Kg	1	5	05/17/12 15:01	aeb
Potassium, total (3050)	M6010B ICP	4010			mg/Kg	30	200	05/17/12 15:01	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	5.1		*	units	0.1	0.1	05/17/12 7:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	96.5		*	%	0.1	0.5	05/18/12 3:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:28	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 3:09	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 13:15	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:28	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 9:28	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 10:26	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 14:04	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	5.3			mg/Kg	0.1	0.5	05/22/12 13:32	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.7		*	mg/Kg	0.1	0.5	05/17/12 0:06	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.36		*	mg/Kg	0.05	0.3	05/17/12 0:06	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	1.9	B	*	mg/Kg	0.3	3	05/18/12 11:59	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.166		*	%	0.002	0.009	05/12/12 14:25	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-16***
Project ID:	ZN023C	Date Sampled:	*04/25/12 11:40*
Sample ID:	STS-AMD-2012S-NEREF2	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 13:33	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 15:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	3200			mg/Kg	20	100	05/17/12 15:04	aeb
Copper (1312)	M6010B ICP	0.84			mg/L	0.01	0.05	05/19/12 19:37	jjc
Copper, total (3050)	M6010B ICP	2140		*	mg/Kg	1	5	05/17/12 15:04	aeb
Potassium, total (3050)	M6010B ICP	3420			mg/Kg	30	200	05/17/12 15:04	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	4.2		*	units	0.1	0.1	05/17/12 8:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	95.5		*	%	0.1	0.5	05/18/12 4:10	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:34	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 4:07	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 13:24	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:34	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 9:34	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 12:01	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 14:25	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.1			mg/Kg	0.1	0.5	05/22/12 13:32	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.4		*	mg/Kg	0.1	0.5	05/17/12 0:07	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.34		*	mg/Kg	0.05	0.3	05/17/12 0:07	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	1.1	B	*	mg/Kg	0.3	3	05/18/12 12:00	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.091		*	%	0.002	0.009	05/12/12 14:26	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94282-17***
Sample ID:	STS-AMD-2012S-NEREF1	Date Sampled:	*04/25/12 11:30*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 13:53	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 15:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7030			mg/Kg	20	100	05/17/12 15:07	aeb
Copper (1312)	M6010B ICP	0.03	B		mg/L	0.01	0.05	05/19/12 19:41	jjc
Copper, total (3050)	M6010B ICP	136		*	mg/Kg	1	5	05/17/12 15:07	aeb
Potassium, total (3050)	M6010B ICP	3570			mg/Kg	30	200	05/17/12 15:07	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.4		*	units	0.1	0.1	05/17/12 9:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	80.8		*	%	0.1	0.5	05/18/12 5:20	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:41	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 5:05	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 13:33	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:41	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 9:41	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 12:49	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 14:46	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.3	B		mg/Kg	0.1	0.5	05/22/12 13:32	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.9		*	mg/Kg	0.1	0.5	05/17/12 0:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.59		*	mg/Kg	0.05	0.3	05/17/12 0:11	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.3	B	*	mg/Kg	0.3	3	05/18/12 12:11	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.073		*	%	0.001	0.007	05/12/12 14:27	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NEREF2

ACZ Sample ID: ***L94282-18***
Date Sampled: *04/25/12 12:00*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 14:12	lhb
Total Hot Plate Digestion	M3010A ICP							05/18/12 15:26	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6690			mg/Kg	20	100	05/17/12 15:10	aeb
Copper (1312)	M6010B ICP	0.04	B		mg/L	0.01	0.05	05/19/12 19:44	jjc
Copper, total (3050)	M6010B ICP	195		*	mg/Kg	1	5	05/17/12 15:10	aeb
Potassium, total (3050)	M6010B ICP	5510			mg/Kg	30	200	05/17/12 15:10	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	05/16/12 8:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	05/16/12 8:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	05/17/12 10:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	79.9		*	%	0.1	0.5	05/18/12 6:30	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:47	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 6:03	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 13:42	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:47	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/15/12 9:47	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 13:37	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/16/12 15:06	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.3	B		mg/Kg	0.1	0.5	05/22/12 13:32	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.7		*	mg/Kg	0.1	0.5	05/17/12 0:12	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.45		*	mg/Kg	0.05	0.3	05/17/12 0:12	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/18/12 12:05	tcd
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.132		*	%	0.002	0.008	05/12/12 14:28	pjb

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94282-19***
Project ID:	ZN023C	Date Sampled:	*04/25/12 12:10*
Sample ID:	STS-AMD-2012S-NEREF3	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 15:39	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.40			mg/L	0.01	0.05	05/19/12 19:47	jjc
Copper, total (3050)	M6010B ICP	2600		*	mg/Kg	1	5	05/17/12 15:13	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.4		*	units	0.1	0.1	05/17/12 11:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	94.6		*	%	0.1	0.5	05/18/12 7:40	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 10:53	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 7:02	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 13:51	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 9:53	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 14:24	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94282-20***
Sample ID:	STS-AMD-2012S-NEREF4	Date Sampled:	*04/25/12 12:15*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/18/12 15:52	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.45			mg/L	0.01	0.05	05/19/12 19:50	jjc
Copper, total (3050)	M6010B ICP	2510		*	mg/Kg	1	5	05/17/12 15:16	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.3		*	units	0.1	0.1	05/17/12 13:00	cra
Solids, Percent	CLPSOW390, PART F, D-98	92.5		*	%	0.1	0.5	05/18/12 8:50	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/08/12 11:00	ndj
Digestion - Hot Plate	M3050B ICP							05/17/12 8:00	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/16/12 14:00	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/15/12 10:00	ndj
Synthetic Precip. Leaching Procedure	M1312							05/17/12 15:12	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94282***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322844													
WG322844ICV	ICV	05/17/12 13:31	II120430-5	100		102.4	mg/L	102.4	90	110			
WG322844ICB	ICB	05/17/12 13:34				U	mg/L		-0.6	0.6			
WG322844PQV	PQV	05/17/12 13:37	II120430-2	1		.99	mg/L	99	70	130			
WG322844ICSAB	ICSAB	05/17/12 13:40	II120217-3	250		253	mg/L	101.2	80	120			
WG322718PBS	PBS	05/17/12 13:46				U	mg/Kg		-60	60			
WG322718LCSS	LCSS	05/17/12 13:50	PCN39540	6140		6520	mg/Kg		5110	7180			
WG322718LCSSD	LCSSD	05/17/12 13:53	PCN39540	6140		6241	mg/Kg		5110	7180	4.4	20	
L94282-01MS	MS	05/17/12 13:59	II120509-2	6937.3974	3140	9886	mg/Kg	97.2	75	125			
L94282-01MSD	MSD	05/17/12 14:02	II120509-2	6937.3974	3140	10053	mg/Kg	99.6	75	125	1.68	20	
L94282-03SDL	SDL	05/17/12 14:11			2020	2070	mg/Kg				2.5	10	
WG322844CCV1	CCV	05/17/12 14:17	II120430-6	50		50.5	mg/L	101	90	110			
WG322844CCB1	CCB	05/17/12 14:20				U	mg/L		-0.6	0.6			
WG322844CCV2	CCV	05/17/12 14:55	II120430-6	50		46.56	mg/L	93.1	90	110			
WG322844CCB2	CCB	05/17/12 14:58				U	mg/L		-0.6	0.6			
WG322844CCV3	CCV	05/17/12 15:19	II120430-6	50		47.83	mg/L	95.7	90	110			
WG322844CCB3	CCB	05/17/12 15:22				U	mg/L		-0.6	0.6			

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322665													
L94282-05DUP	DUP	05/16/12 8:00			1.2	1.2	%				0	20	
WG322665LCSS	LCSS	05/16/12 8:00	PCN38836	4.19		4	%		80	120			

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322665													
L94282-05DUP	DUP	05/16/12 8:00			1.1	1.1	%				0	20	

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322977													
WG322977ICV	ICV	05/19/12 18:05	II120430-5	2		1.921	mg/L	96.1	90	110			
WG322977ICB	ICB	05/19/12 18:08				U	mg/L		-0.03	0.03			
WG322977PQV	PQV	05/19/12 18:11	II120430-2	.05		.052	mg/L	104	70	130			
WG322977ICSAB	ICSAB	05/19/12 18:14	II120517-1	.255		.247	mg/L	96.9	80	120			
WG322782PBS	PBS	05/19/12 18:20				.01	mg/L		-0.03	0.03			
WG322782LFB	LFB	05/19/12 18:24	II120509-2	.5		.503	mg/L	100.6	85	115			
L94282-01MS	MS	05/19/12 18:30	II120509-2	.5	.07	.574	mg/L	100.8	75	125			
L94282-01MSD	MSD	05/19/12 18:33	II120509-2	.5	.07	.581	mg/L	102.2	75	125	1.21	20	
L94282-02DUP	DUP	05/19/12 18:39			.13	.133	mg/L				2.3	20	
L94282-04SDL	SDL	05/19/12 18:48			.12	.12	mg/L				0	10	
WG322977CCV1	CCV	05/19/12 18:51	II120430-6	1		1.002	mg/L	100.2	90	110			
WG322977CCB1	CCB	05/19/12 18:54				U	mg/L		-0.03	0.03			
WG322977CCV2	CCV	05/19/12 19:28	II120430-6	1		.989	mg/L	98.9	90	110			
WG322977CCB2	CCB	05/19/12 19:31				U	mg/L		-0.03	0.03			
WG322977CCV3	CCV	05/19/12 19:53	II120430-6	1		1.001	mg/L	100.1	90	110			
WG322977CCB3	CCB	05/19/12 19:56				U	mg/L		-0.03	0.03			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94282***

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322844													
WG322844ICV	ICV	05/17/12 13:31	II120430-5	2		1.983	mg/L	99.2	90	110			
WG322844ICB	ICB	05/17/12 13:34				U	mg/L		-0.03	0.03			
WG322844PQV	PQV	05/17/12 13:37	II120430-2	.05		.05	mg/L	100	70	130			
WG322844ICSAB	ICSAB	05/17/12 13:40	II120217-3	.255		.248	mg/L	97.3	80	120			
WG322718PBS	PBS	05/17/12 13:46				U	mg/Kg		-3	3			
WG322718LCSS	LCSS	05/17/12 13:50	PCN39540	79.6		81.2	mg/Kg		66.7	92.4			
WG322718LCSSD	LCSSD	05/17/12 13:53	PCN39540	79.6		81.3	mg/Kg		66.7	92.4	0.1	20	
L94282-01MS	MS	05/17/12 13:59	II120509-2	51	1200	1365.8	mg/Kg	325.1	75	125			M3
L94282-01MSD	MSD	05/17/12 14:02	II120509-2	51	1200	1257.7	mg/Kg	113.1	75	125	8.24	20	
L94282-03SDL	SDL	05/17/12 14:11			1370	1396	mg/Kg				1.9	10	
WG322844CCV1	CCV	05/17/12 14:17	II120430-6	1		.99	mg/L	99	90	110			
WG322844CCB1	CCB	05/17/12 14:20				U	mg/L		-0.03	0.03			
WG322844CCV2	CCV	05/17/12 14:55	II120430-6	1		.94	mg/L	94	90	110			
WG322844CCB2	CCB	05/17/12 14:58				U	mg/L		-0.03	0.03			
WG322844CCV3	CCV	05/17/12 15:19	II120430-6	1		.971	mg/L	97.1	90	110			
WG322844CCB3	CCB	05/17/12 15:22				U	mg/L		-0.03	0.03			

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322807													
WG322807ICV	ICV	05/16/12 22:56	WI120405-3	2.416		2.521	mg/L	104.3	90	110			
WG322807ICB	ICB	05/16/12 22:58				U	mg/L		-0.06	0.06			
WG322809													
WG322809CCV1	CCV	05/16/12 23:54	WI120515-7	2		2.012	mg/L	100.6	90	110			
WG322809CCB1	CCB	05/16/12 23:55				U	mg/L		-0.06	0.06			
WG322809LFB	LFB	05/16/12 23:57	WI120211-3	2		2.075	mg/Kg	103.8	90	110			
WG322746PBS	PBS	05/16/12 23:58				U	mg/Kg		-0.3	0.3			
L94282-05DUP	DUP	05/17/12 0:00			.4	.38	mg/Kg				5.1	20	RA
L94282-06AS	AS	05/17/12 0:03	WI120211-3	10	1	11.44	mg/Kg	104.4	90	110			
WG322809CCV2	CCV	05/17/12 0:09	WI120515-7	2		2.068	mg/L	103.4	90	110			
WG322809CCB2	CCB	05/17/12 0:10				U	mg/L		-0.06	0.06			
WG322809CCV3	CCV	05/17/12 0:20	WI120515-7	2		2.057	mg/L	102.9	90	110			
WG322809CCB3	CCB	05/17/12 0:21				U	mg/L		-0.06	0.06			

Inorganic QC Summary

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94282***

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322807													
WG322807ICV	ICV	05/16/12 22:56	WI120405-3	.609		.635	mg/L	104.3	90	110			
WG322807ICB	ICB	05/16/12 22:58				U	mg/L		-0.03	0.03			
WG322809													
WG322809CCV1	CCV	05/16/12 23:54	WI120515-7	1		1.006	mg/L	100.6	90	110			
WG322809CCB1	CCB	05/16/12 23:55				U	mg/L		-0.03	0.03			
WG322809LFB	LFB	05/16/12 23:57	WI120211-3	1		1.05	mg/Kg	105	90	110			
WG322746PBS	PBS	05/16/12 23:58				U	mg/Kg		-0.15	0.15			
L94282-05DUP	DUP	05/17/12 0:00			.27	.275	mg/Kg				1.8	20	RA
L94282-06AS	AS	05/17/12 0:03	WI120211-3	5	.24	5.466	mg/Kg	104.5	90	110			
WG322809CCV2	CCV	05/17/12 0:09	WI120515-7	1		1.042	mg/L	104.2	90	110			
WG322809CCB2	CCB	05/17/12 0:10				U	mg/L		-0.03	0.03			
WG322809CCV3	CCV	05/17/12 0:20	WI120515-7	1		1.031	mg/L	103.1	90	110			
WG322809CCB3	CCB	05/17/12 0:21				U	mg/L		-0.03	0.03			

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322925													
WG322925ICV	ICV	05/18/12 11:46	WI111117-1	1.002		.95	mg/L	94.8	90	110			
WG322925ICB	ICB	05/18/12 11:49				U	mg/L		-0.15	0.15			
WG322746PBS	PBS	05/18/12 11:52				U	mg/Kg		-0.9	0.9			
L94282-05DUP	DUP	05/18/12 11:54			.4	.39	mg/Kg				2.5	20	RA
L94282-06AS	AS	05/18/12 11:56	WI111101-3	5	.4	5.22	mg/Kg	96.4	75	125			
WG322925CCV1	CCV	05/18/12 12:01	WI111101-1	2		1.953	mg/L	97.7	90	110			
WG322925CCB1	CCB	05/18/12 12:03				U	mg/L		-0.15	0.15			
WG322925LFB	LFB	05/18/12 12:10	WI111101-3	1		.932	mg/Kg	93.2	85	115			
WG322925CCV2	CCV	05/18/12 12:14	WI111101-1	2		1.914	mg/L	95.7	90	110			
WG322925CCB2	CCB	05/18/12 12:15				U	mg/L		-0.15	0.15			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322557													
WG322557ICV	ICV	05/12/12 14:09	WI120424-1	4		3.65	mg/L	91.3	90	110			
WG322557ICB	ICB	05/12/12 14:10				.12	mg/L		-0.3	0.3			
WG322368PBS	PBS	05/12/12 14:12				U	%		-0.006	0.006			
WG322368LFB	LFB	05/12/12 14:13	WI120215-4	2.5		2.55	%	102	85	115			
L94281-17MS	MS	05/12/12 14:15	WI120215-4	.055	.094	.1454	%	93.5	75	125			
L94281-18DUP	DUP	05/12/12 14:17			.083	.0862	%				3.8	20	
WG322557CCV1	CCV	05/12/12 14:23	WI120412-1	5		5.13	mg/L	102.6	90	110			
WG322557CCB1	CCB	05/12/12 14:24				.17	mg/Kg		-0.3	0.3			
WG322557CCV2	CCV	05/12/12 14:36	WI120412-1	5		5.17	mg/L	103.4	90	110			
WG322557CCB2	CCB	05/12/12 14:38				.15	mg/Kg		-0.3	0.3			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94282***

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322736													
WG322736ICV	ICV	05/16/12 14:00	PCN38642	4		4.03	units	100.8	97	103			
L94282-01DUP	DUP	05/16/12 16:00			5.2	5.2	units				0	20	
WG322736CCV1	CCV	05/17/12 1:00	PCN38642	4		4.07	units	101.8	97	103			
WG322736CCV2	CCV	05/17/12 12:00	PCN38642	4		3.96	units	99	97	103			
WG322736CCV3	CCV	05/17/12 14:00	PCN38642	4		3.97	units	99.3	97	103			

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322844													
WG322844ICV	ICV	05/17/12 13:31	II120430-5	20		20.52	mg/L	102.6	90	110			
WG322844ICB	ICB	05/17/12 13:34				U	mg/L		-0.9	0.9			
WG322844PQV	PQV	05/17/12 13:37	II120430-2	1.5		1.47	mg/L	98	70	130			
WG322844ICSAB	ICSAB	05/17/12 13:40	II120217-3	25		25.7	mg/L	102.8	80	120			
WG322718PBS	PBS	05/17/12 13:46				U	mg/Kg		-90	90			
WG322718LCSS	LCSS	05/17/12 13:50	PCN39540	2490		2734	mg/Kg		1740	3230			
WG322718LCSSD	LCSSD	05/17/12 13:53	PCN39540	2490		2814	mg/Kg		1740	3230	2.9	20	
L94282-01MS	MS	05/17/12 13:59	II120509-2	10191.75534	3710	14576	mg/Kg	106.6	75	125			
L94282-01MSD	MSD	05/17/12 14:02	II120509-2	10191.75534	3710	14668	mg/Kg	107.5	75	125	0.63	20	
L94282-03SDL	SDL	05/17/12 14:11			2910	2935	mg/Kg				0.9	10	
WG322844CCV1	CCV	05/17/12 14:17	II120430-6	10		10.08	mg/L	100.8	90	110			
WG322844CCB1	CCB	05/17/12 14:20				U	mg/L		-0.9	0.9			
WG322844CCV2	CCV	05/17/12 14:55	II120430-6	10		9.66	mg/L	96.6	90	110			
WG322844CCB2	CCB	05/17/12 14:58				U	mg/L		-0.9	0.9			
WG322844CCV3	CCV	05/17/12 15:19	II120430-6	10		9.96	mg/L	99.6	90	110			
WG322844CCB3	CCB	05/17/12 15:22				U	mg/L		-0.9	0.9			

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322813													
WG322813PBS	PBS	05/17/12 9:30				U	%		99.9	100.1			
L94282-20DUP	DUP	05/18/12 10:00			92.5	92.47	%				0	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L94282***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94282-01	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-02	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-03	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-04	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-05	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94282-06	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94282-07	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94282-08	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94282-09	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-10	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-11	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-12	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-13	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-14	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94282-15	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94282-16	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94282-17	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94282-18	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322809	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322925	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94282-19	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94282-20	WG322844	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94282
Date Received: 04/30/2012 09:29
Received By: ksj
Date Printed: 5/1/2012

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
Na15246		10.7	15
Na15247		9.5	16
Na15248		8.9	16
Na15249		9.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94282
Date Received: 04/30/2012 09:29
Received By: ksj
Date Printed: 5/1/2012

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L94282-01	STS-AMD-2012S-EREF5									X		☐
L94282-02	STS-AMD-2012S-EREF6									X		☐
L94282-03	STS-AMD-2012S-EREF7									X		☐
L94282-04	STS-AMD-2012S-EREF8									X		☐
L94282-05	STS-AMD-2012S-NREF1									X		☐
L94282-06	STS-AMD-2012S-NREF2									X		☐
L94282-07	STS-AMD-2012S-NREF1									X		☐
L94282-08	STS-AMD-2012S-NREF2									X		☐
L94282-09	STS-AMD-2012S-NREF3									X		☐
L94282-10	STS-AMD-2012S-NREF4									X		☐
L94282-11	STS-AMD-2012S-NREF5									X		☐
L94282-12	STS-AMD-2012S-NREF6									X		☐
L94282-13	STS-AMD-2012S-NREF7									X		☐
L94282-14	STS-AMD-2012S-NREF8									X		☐
L94282-15	STS-AMD-2012S-NEREF1									X		☐
L94282-16	STS-AMD-2012S-NEREF2									X		☐
L94282-17	STS-AMD-2012S-NEREF1									X		☐
L94282-18	STS-AMD-2012S-NEREF2									X		☐
L94282-19	STS-AMD-2012S-NEREF3									X		☐
L94282-20	STS-AMD-2012S-NEREF4									X		☐

Sample Container Preservation Legend

Abbreviation	**Description**	**Container Type**	**Preservative/Limits**
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc. L94282
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012S-EREF5 0-6	4.24.12 17:40	SO	1	x	x	x					
STS-AMD-2012S-EREF6 0-6	4.24.12 17:45	SO	1	x	x	x					
STS-AMD-2012S-EREF7 0-6	4.24.12 17:35	SO	1	x	x	x					
STS-AMD-2012S-EREF8 0-6	4.24.12 17:50	SO	1	x	x	x					
STS-AMD-2012S-NREF1 0-6	4.25.12 15:00	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NREF2 0-6	4.25.12 15:25	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NREF1 18-24	4.25.12 15:15	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NREF2 12-18	4.25.12 15:40	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NREF3 0-6	4.25.12 15:05	SO	1	x	x	x					
STS-AMD-2012S-NREF4 0-6	4.25.12 15:00	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM 4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.26.12 1530	ALK 4/30/12	0900

L94282 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

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ACZ Laboratories, Inc. L94282

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (See below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012S-NREF5 0-6	4.25.12 15:10	SO	1	X	X	X					
STS-AMD-2012S-NREF6 0-6	4.25.12 15:30	SO	1	X	X	X					
STS-AMD-2012S-NREF7 0-6	4.25.12 15:20	SO	1	X	X	X					
STS-AMD-2012S-NREF8 0-6	4.25.12 15:35	SO	1	X	X	X					
STS-AMD-2012S-NEREF1 0-6	4.25.12 11:10	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-NEREF2 0-6	4.25.12 11:40	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-NEREF1 12-18	4.25.12 11:30	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-NEREF2 6-12	4.25.12 12:00	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-NEREF3 0-6	4.25.12 12:10	SO	1	X	X	X					
STS-AMD-2012S-NEREF4 0-6	4.25.12 12:15	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.26.12 1330	ALK 4/30/12	0900

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

8

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

May 23, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley, Sheri Fling

Project ID: ZN023C
ACZ Project ID: L94281

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 30, 2012. This project has been assigned to ACZ's project number, L94281. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L94281. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 23, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NE5 0-

ACZ Sample ID: ***L94281-01***
Date Sampled: *04/25/12 10:35*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 11:25	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.57		*	mg/L	0.01	0.05	05/16/12 13:07	jjc
Copper, total (3050)	M6010B ICP	2850		*	mg/Kg	1	5	05/12/12 1:21	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.9		*	units	0.1	0.1	05/15/12 11:57	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.6		*	%	0.1	0.5	05/16/12 10:17	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:00	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 9:52	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:00	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:00	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 7:25	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NE6 0-

ACZ Sample ID: ***L94281-02***
Date Sampled: *04/25/12 10:40*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 11:50	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.13		*	mg/L	0.01	0.05	05/16/12 13:13	jjc
Copper, total (3050)	M6010B ICP	924		*	mg/Kg	1	5	05/12/12 1:30	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.5		*	units	0.1	0.1	05/15/12 12:26	bsu
Solids, Percent	CLPSOW390, PART F, D-98	93.0		*	%	0.1	0.5	05/16/12 11:34	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:06	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 10:45	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:10	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:06	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 13:13	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN023C
Sample ID: STS-AMD-2012S-NE7 0-

ACZ Sample ID: ***L94281-03***
Date Sampled: *04/25/12 10:43*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 12:28	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.40		*	mg/L	0.01	0.05	05/16/12 13:22	jjc
Copper, total (3050)	M6010B ICP	2720		*	mg/Kg	1	5	05/12/12 1:33	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.4		*	units	0.1	0.1	05/15/12 12:41	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.8		*	%	0.1	0.5	05/16/12 12:51	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:12	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:02	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:15	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:12	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 21:56	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NE8 0-

ACZ Sample ID: ***L94281-04***
Date Sampled: *04/25/12 10:45*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 12:41	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.47		*	mg/L	0.01	0.05	05/16/12 13:25	jjc
Copper, total (3050)	M6010B ICP	2440		*	mg/Kg	1	5	05/12/12 1:36	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.8		*	units	0.1	0.1	05/15/12 12:55	bsu
Solids, Percent	CLPSOW390, PART F, D-98	94.2		*	%	0.1	0.5	05/16/12 14:08	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:18	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:20	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:21	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:18	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 0:50	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94281-05***
Project ID:	ZN023C	Date Sampled:	*04/26/12 10:45*
Sample ID:	STS-AMD-2012S-WREF1	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/15/12 12:54	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	55600		*	mg/Kg	20	100	05/12/12 1:39	aeb
Copper (1312)	M6010B ICP	0.29		*	mg/L	0.01	0.05	05/16/12 13:38	jjc
Copper, total (3050)	M6010B ICP	3600		*	mg/Kg	1	5	05/12/12 1:39	aeb
Potassium, total (3050)	M6010B ICP	2850		*	mg/Kg	30	200	05/12/12 1:39	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.7		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	05/15/12 13:10	bsu
Solids, Percent	CLPSOW390, PART F, D-98	98.9		*	%	0.1	0.5	05/16/12 15:25	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:25	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:37	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:26	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:25	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 15:25	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 3:44	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 13:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	6.1			mg/Kg	0.1	0.5	05/22/12 12:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	6.4		*	mg/Kg	0.1	0.5	05/16/12 0:09	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.28	B	*	mg/Kg	0.05	0.3	05/16/12 0:09	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.4	B	*	mg/Kg	0.3	3	05/16/12 13:31	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.069		*	%	0.001	0.007	05/10/12 0:02	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-WREF2

ACZ Sample ID: ***L94281-06***
Date Sampled: *04/26/12 11:00*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/15/12 13:07	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	15100		*	mg/Kg	20	100	05/12/12 1:48	aeb
Copper (1312)	M6010B ICP	0.21		*	mg/L	0.01	0.05	05/16/12 13:41	jjc
Copper, total (3050)	M6010B ICP	2760		*	mg/Kg	1	5	05/12/12 1:48	aeb
Potassium, total (3050)	M6010B ICP	2590		*	mg/Kg	30	200	05/12/12 1:48	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.2		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	05/15/12 13:24	bsu
Solids, Percent	CLPSOW390, PART F, D-98	98.5		*	%	0.1	0.5	05/16/12 16:42	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:31	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:55	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:31	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:31	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 15:31	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 9:33	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 13:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.3			mg/Kg	0.1	0.5	05/22/12 12:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.5		*	mg/Kg	0.1	0.5	05/16/12 0:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.25	B	*	mg/Kg	0.05	0.3	05/16/12 0:10	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:45	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.094		*	%	0.001	0.007	05/10/12 0:04	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-07***
Sample ID:	STS-AMD-2012S-WREF1	Date Sampled:	*04/26/12 10:55*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/15/12 13:19	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	47300		*	mg/Kg	20	100	05/12/12 1:54	aeb
Copper (1312)	M6010B ICP	0.04	B	*	mg/L	0.01	0.05	05/16/12 13:44	jjc
Copper, total (3050)	M6010B ICP	259		*	mg/Kg	1	5	05/12/12 1:54	aeb
Potassium, total (3050)	M6010B ICP	2550		*	mg/Kg	30	200	05/12/12 1:54	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.7		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 13:38	bsu
Solids, Percent	CLPSOW390, PART F, D-98	87.6		*	%	0.1	0.5	05/16/12 18:00	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:37	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 12:12	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:36	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:37	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 15:37	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 12:27	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 14:00	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.5			mg/Kg	0.1	0.5	05/22/12 12:02	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.7		*	mg/Kg	0.1	0.5	05/16/12 0:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.23	B	*	mg/Kg	0.05	0.3	05/16/12 0:11	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:34	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.038		*	%	0.002	0.008	05/10/12 0:05	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-08***
Sample ID:	STS-AMD-2012S-WREF2	Date Sampled:	*04/26/12 11:05*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/15/12 13:32	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	36900		*	mg/Kg	20	100	05/12/12 1:57	aeb
Copper (1312)	M6010B ICP	0.01	B	*	mg/L	0.01	0.05	05/16/12 13:47	jjc
Copper, total (3050)	M6010B ICP	220		*	mg/Kg	1	5	05/12/12 1:57	aeb
Potassium, total (3050)	M6010B ICP	2350		*	mg/Kg	30	200	05/12/12 1:57	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.4		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	05/15/12 13:53	bsu
Solids, Percent	CLPSOW390, PART F, D-98	90.0		*	%	0.1	0.5	05/16/12 19:17	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:44	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 12:30	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:42	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:44	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 15:44	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 15:21	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 14:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.9			mg/Kg	0.1	0.5	05/22/12 12:03	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.2		*	mg/Kg	0.1	0.5	05/16/12 0:13	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.30	B	*	mg/Kg	0.05	0.3	05/16/12 0:13	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:35	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.057		*	%	0.002	0.009	05/10/12 0:06	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94281-09***
Project ID:	ZN023C	Date Sampled:	*04/26/12 11:10*
Sample ID:	STS-AMD-2012S-WREF3	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 13:45	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	05/16/12 13:50	jjc
Copper, total (3050)	M6010B ICP	371		*	mg/Kg	1	5	05/12/12 2:01	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 14:07	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	05/16/12 20:34	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:50	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 12:47	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:47	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:50	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 18:15	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN023C
Sample ID: STS-AMD-2012S-WREF4

ACZ Sample ID: ***L94281-10***
Date Sampled: *04/26/12 11:15*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 13:57	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.09		*	mg/L	0.01	0.05	05/16/12 13:53	jjc
Copper, total (3050)	M6010B ICP	2250		*	mg/Kg	1	5	05/12/12 2:04	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 14:36	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.7		*	%	0.1	0.5	05/16/12 21:51	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:56	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:05	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:52	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 15:56	ndj
Synthetic Precip. Leaching Procedure	M1312							05/12/12 21:09	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-WREF5

ACZ Sample ID: ***L94281-11***
Date Sampled: *04/26/12 11:20*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 14:10	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.10		*	mg/L	0.01	0.05	05/16/12 13:56	jjc
Copper, total (3050)	M6010B ICP	972		*	mg/Kg	1	5	05/12/12 2:07	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 14:51	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.6		*	%	0.1	0.5	05/16/12 23:08	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:03	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:22	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 15:57	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:03	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 0:04	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-12***
Sample ID:	STS-AMD-2012S-WREF6	Date Sampled:	*04/26/12 11:25*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 14:23	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	05/16/12 13:59	jjc
Copper, total (3050)	M6010B ICP	836		*	mg/Kg	1	5	05/12/12 2:10	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	05/15/12 15:05	bsu
Solids, Percent	CLPSOW390, PART F, D-98	98.1		*	%	0.1	0.5	05/17/12 0:25	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:09	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:40	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:03	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:09	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 2:58	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-13***
Sample ID:	STS-AMD-2012S-WREF7	Date Sampled:	*04/26/12 11:30*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 14:35	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.58		*	mg/L	0.01	0.05	05/16/12 14:03	jjc
Copper, total (3050)	M6010B ICP	3290		*	mg/Kg	1	5	05/12/12 2:13	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 15:20	bsu
Solids, Percent	CLPSOW390, PART F, D-98	98.7		*	%	0.1	0.5	05/17/12 1:42	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:15	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:57	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:08	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:15	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 5:52	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-WREF8

ACZ Sample ID: ***L94281-14***
Date Sampled: *04/26/12 11:35*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 14:48	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	05/16/12 14:06	jjc
Copper, total (3050)	M6010B ICP	420		*	mg/Kg	1	5	05/12/12 2:16	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 15:34	bsu
Solids, Percent	CLPSOW390, PART F, D-98	98.2		*	%	0.1	0.5	05/17/12 3:00	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:22	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 14:15	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:13	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:22	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 8:46	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-EREF1

ACZ Sample ID: ***L94281-15***
Date Sampled: *04/24/12 17:00*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/15/12 15:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2660		*	mg/Kg	20	100	05/12/12 2:25	aeb
Copper (1312)	M6010B ICP	0.16		*	mg/L	0.01	0.05	05/16/12 14:15	jjc
Copper, total (3050)	M6010B ICP	1150		*	mg/Kg	1	5	05/12/12 2:25	aeb
Potassium, total (3050)	M6010B ICP	2400		*	mg/Kg	30	200	05/12/12 2:25	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	05/15/12 15:49	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	05/17/12 4:17	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:28	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 14:32	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:18	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:28	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 16:28	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 11:40	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 14:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.6			mg/Kg	0.1	0.5	05/22/12 12:03	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	8.6		*	mg/Kg	0.1	0.5	05/16/12 0:14	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.05	0.3	05/16/12 0:14	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:36	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.065		*	%	0.002	0.009	05/10/12 0:07	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-16***
Sample ID:	STS-AMD-2012S-EREF2	Date Sampled:	*04/24/12 17:20*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/15/12 15:14	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2810		*	mg/Kg	20	100	05/12/12 2:28	aeb
Copper (1312)	M6010B ICP	0.13		*	mg/L	0.01	0.05	05/16/12 14:18	jjc
Copper, total (3050)	M6010B ICP	1120		*	mg/Kg	1	5	05/12/12 2:28	aeb
Potassium, total (3050)	M6010B ICP	3240		*	mg/Kg	30	200	05/12/12 2:28	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	4.9		*	units	0.1	0.1	05/15/12 16:03	bsu
Solids, Percent	CLPSOW390, PART F, D-98	95.1		*	%	0.1	0.5	05/17/12 5:34	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:34	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 14:50	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:24	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:34	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 16:34	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 17:29	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 15:00	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.6			mg/Kg	0.1	0.5	05/22/12 12:03	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.8		*	mg/Kg	0.1	0.5	05/16/12 0:17	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	05/16/12 0:17	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:37	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.053		*	%	0.002	0.008	05/10/12 0:08	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-17***
Sample ID:	STS-AMD-2012S-EREF1	Date Sampled:	*04/24/12 17:05*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 10:38	lhb
Total Hot Plate Digestion	M3010A ICP							05/15/12 15:26	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	24100		*	mg/Kg	20	100	05/12/12 2:31	aeb
Copper (1312)	M6010B ICP	0.13		*	mg/L	0.01	0.05	05/16/12 14:21	jjc
Copper, total (3050)	M6010B ICP	141		*	mg/Kg	1	5	05/12/12 2:31	aeb
Potassium, total (3050)	M6010B ICP	4240		*	mg/Kg	30	200	05/12/12 2:31	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.7		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	05/15/12 16:17	bsu
Solids, Percent	CLPSOW390, PART F, D-98	80.2		*	%	0.1	0.5	05/17/12 6:51	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:41	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 15:07	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:29	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:41	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 16:41	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 20:23	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 15:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	7.6			mg/Kg	0.1	0.5	05/22/12 12:03	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.7		*	mg/Kg	0.1	0.5	05/16/12 0:18	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.06	B	*	mg/Kg	0.05	0.3	05/16/12 0:18	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:40	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.094		*	%	0.002	0.01	05/12/12 14:14	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94281-18***
Project ID:	ZN023C	Date Sampled:	*04/24/12 17:25*
Sample ID:	STS-AMD-2012S-EREF2	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/10/12 11:17	lhb
Total Hot Plate Digestion	M3010A ICP							05/15/12 15:39	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4810		*	mg/Kg	20	100	05/12/12 2:34	aeb
Copper (1312)	M6010B ICP	0.05		*	mg/L	0.01	0.05	05/16/12 14:24	jjc
Copper, total (3050)	M6010B ICP	86		*	mg/Kg	1	5	05/12/12 2:34	aeb
Potassium, total (3050)	M6010B ICP	4570		*	mg/Kg	30	200	05/12/12 2:34	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.7		*	units	0.1	0.1	05/15/12 16:32	bsu
Solids, Percent	CLPSOW390, PART F, D-98	80.5		*	%	0.1	0.5	05/17/12 8:08	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:47	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 15:25	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:34	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:47	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 16:47	ndj
Synthetic Precip. Leaching Procedure	M1312							05/13/12 23:17	mss2
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 15:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.1			mg/Kg	0.1	0.5	05/22/12 12:03	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	8.3		*	mg/Kg	0.1	0.5	05/16/12 0:20	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.24	B	*	mg/Kg	0.05	0.3	05/16/12 0:20	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:42	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.083		*	%	0.002	0.01	05/12/12 14:16	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN023C

Sample ID: STS-AMD-2012S-EREF3

ACZ Sample ID: ***L94281-19***

Date Sampled: *04/24/12 17:35*

Date Received: *04/30/12*

Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 15:52	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	05/16/12 14:27	jjc
Copper, total (3050)	M6010B ICP	808		*	mg/Kg	1	5	05/12/12 2:37	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.7		*	units	0.1	0.1	05/15/12 16:46	bsu
Solids, Percent	CLPSOW390, PART F, D-98	93.6		*	%	0.1	0.5	05/17/12 9:25	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:53	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 15:42	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:39	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 16:53	ndj
Synthetic Precip. Leaching Procedure	M1312							05/14/12 2:11	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94281-20***
Sample ID:	STS-AMD-2012S-EREF4	Date Sampled:	*04/24/12 17:35*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/15/12 16:04	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.18		*	mg/L	0.01	0.05	05/16/12 14:30	jjc
Copper, total (3050)	M6010B ICP	1060		*	mg/Kg	1	5	05/12/12 2:40	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.4		*	units	0.1	0.1	05/15/12 17:15	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	05/17/12 10:43	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 16:00	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 16:00	mss2
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 16:45	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 17:00	ndj
Synthetic Precip. Leaching Procedure	M1312							05/14/12 5:06	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322502													
WG322502ICV	ICV	05/12/12 0:56	II120430-5	100		98.95	mg/L	99	90	110			
WG322502ICB	ICB	05/12/12 0:59				U	mg/L		-0.6	0.6			
WG322502PQV	PQV	05/12/12 1:03	II120430-2	1		1.03	mg/L	103	70	130			
WG322502ICSAB	ICSAB	05/12/12 1:06	II120217-3	250		245.8	mg/L	98.3	80	120			
WG322436PBS	PBS	05/12/12 1:12				U	mg/Kg		-60	60			
WG322436LCSS	LCSS	05/12/12 1:15	PCN39540	6140		5509	mg/Kg		5110	7180			
WG322436LCSSD	LCSSD	05/12/12 1:18	PCN39540	6140		5732	mg/Kg		5110	7180	4	20	
L94281-01MS	MS	05/12/12 1:24	II120509-2	6869.3837	3440	9479	mg/Kg	87.9	75	125			
L94281-01MSD	MSD	05/12/12 1:27	II120509-2	6869.3837	3440	12272	mg/Kg	128.6	75	125	25.68	20	M2 RD
WG322502CCV1	CCV	05/12/12 1:42	II120430-6	50		49.47	mg/L	98.9	90	110			
WG322502CCB1	CCB	05/12/12 1:45				U	mg/L		-0.6	0.6			
L94281-06SDL	SDL	05/12/12 1:51			15100	17205	mg/Kg				13.9	10	ZH
WG322502CCV2	CCV	05/12/12 2:19	II120430-6	50		49.39	mg/L	98.8	90	110			
WG322502CCB2	CCB	05/12/12 2:22				U	mg/L		-0.6	0.6			
WG322502CCV3	CCV	05/12/12 2:43	II120430-6	50		50.05	mg/L	100.1	90	110			
WG322502CCB3	CCB	05/12/12 2:47				U	mg/L		-0.6	0.6			

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322425													
L94280-03DUP	DUP	05/10/12 9:00			1.1	1.1	%				0	20	
WG322425LCSS	LCSS	05/10/12 9:00	PCN38836	4.19		4.1	%		80	120			
WG322425PBS	PBS	05/10/12 9:00				U	%		-0.3	0.3			

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322425													
L94280-03DUP	DUP	05/10/12 9:00			1	1	%				0	20	
WG322425PBS	PBS	05/10/12 9:00				U	%		-0.3	0.3			

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322731													
WG322731ICV	ICV	05/16/12 12:46	II120430-3	2		1.986	mg/L	99.3	90	110			
WG322731ICB	ICB	05/16/12 12:49				U	mg/L		-0.03	0.03			
WG322731PQV	PQV	05/16/12 12:52	II120430-2	.05		.05	mg/L	100	70	130			
WG322731ICSAB	ICSAB	05/16/12 12:55	II120229-1	.255		.249	mg/L	97.6	80	120			
WG322459PBS	PBS	05/16/12 13:01				U	mg/L		-0.03	0.03			
WG322459LFB	LFB	05/16/12 13:04	II120509-2	.5		.494	mg/L	98.8	85	115			
L94281-01DUP	DUP	05/16/12 13:10			.57	.698	mg/L				20.2	20	RD
L94281-02MS	MS	05/16/12 13:16	II120509-2	.5	.13	.63	mg/L	100	75	125			
L94281-02MSD	MSD	05/16/12 13:19	II120509-2	.5	.13	.631	mg/L	100.2	75	125	0.16	20	
L94281-04SDL	SDL	05/16/12 13:28			.47	.485	mg/L				3.2	10	
WG322731CCV1	CCV	05/16/12 13:32	II120430-4	1		.986	mg/L	98.6	90	110			
WG322731CCB1	CCB	05/16/12 13:35				U	mg/L		-0.03	0.03			
WG322731CCV2	CCV	05/16/12 14:09	II120430-4	1		.997	mg/L	99.7	90	110			
WG322731CCB2	CCB	05/16/12 14:12				U	mg/L		-0.03	0.03			
WG322731CCV3	CCV	05/16/12 14:34	II120430-4	1		1.005	mg/L	100.5	90	110			
WG322731CCB3	CCB	05/16/12 14:37				U	mg/L		-0.03	0.03			

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322502													
WG322502ICV	ICV	05/12/12 0:56	II120430-5	2		1.964	mg/L	98.2	90	110			
WG322502ICB	ICB	05/12/12 0:59				U	mg/L		-0.03	0.03			
WG322502PQV	PQV	05/12/12 1:03	II120430-2	.05		.05	mg/L	100	70	130			
WG322502ICSAB	ICSAB	05/12/12 1:06	II120217-3	.255		.244	mg/L	95.7	80	120			
WG322436PBS	PBS	05/12/12 1:12				U	mg/Kg		-3	3			
WG322436LCSS	LCSS	05/12/12 1:15	PCN39540	79.6		73.8	mg/Kg		66.7	92.4			
WG322436LCSSD	LCSSD	05/12/12 1:18	PCN39540	79.6		75.1	mg/Kg		66.7	92.4	1.7	20	
L94281-01MS	MS	05/12/12 1:24	II120509-2	50.5	2850	2826	mg/Kg	-47.5	75	125			M3
L94281-01MSD	MSD	05/12/12 1:27	II120509-2	50.5	2850	3254.2	mg/Kg	800.4	75	125	14.09	20	M3
WG322502CCV1	CCV	05/12/12 1:42	II120430-6	1		.978	mg/L	97.8	90	110			
WG322502CCB1	CCB	05/12/12 1:45				U	mg/L		-0.03	0.03			
L94281-06SDL	SDL	05/12/12 1:51			2760	3108.5	mg/Kg				12.6	10	ZH
WG322502CCV2	CCV	05/12/12 2:19	II120430-6	1		.98	mg/L	98	90	110			
WG322502CCB2	CCB	05/12/12 2:22				U	mg/L		-0.03	0.03			
WG322502CCV3	CCV	05/12/12 2:43	II120430-6	1		.997	mg/L	99.7	90	110			
WG322502CCB3	CCB	05/12/12 2:47				U	mg/L		-0.03	0.03			

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322706													
WG322706ICV	ICV	05/15/12 22:18	WI120405-3	2.416		2.527	mg/L	104.6	90	110			
WG322706ICB	ICB	05/15/12 22:19				U	mg/L		-0.06	0.06			
WG322709													
WG322709CCV1	CCV	05/15/12 23:46	WI120515-7	2		1.954	mg/L	97.7	90	110			
WG322709CCB1	CCB	05/15/12 23:48				U	mg/L		-0.06	0.06			
WG322709LFB	LFB	05/15/12 23:49	WI120211-3	2		2.064	mg/Kg	103.2	90	110			
WG322563PBS	PBS	05/15/12 23:50				.13	mg/Kg		-0.3	0.3			
L94280-03AS	AS	05/15/12 23:52	WI120211-3	10	1.1	11.7	mg/Kg	106	90	110			
WG322709CCV2	CCV	05/16/12 0:01	WI120515-7	2		1.977	mg/L	98.9	90	110			
WG322709CCB2	CCB	05/16/12 0:02				U	mg/L		-0.06	0.06			
WG322709CCV3	CCV	05/16/12 0:15	WI120515-7	2		1.951	mg/L	97.6	90	110			
WG322709CCB3	CCB	05/16/12 0:16				U	mg/L		-0.06	0.06			
L94281-18DUP	DUP	05/16/12 0:21			8.3	8.2	mg/Kg				1.2	20	
WG322709CCV4	CCV	05/16/12 0:28	WI120515-7	2		1.967	mg/L	98.4	90	110			
WG322709CCB4	CCB	05/16/12 0:29				U	mg/L		-0.06	0.06			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322706													
WG322706ICV	ICV	05/15/12 22:18	WI120405-3	.609		.629	mg/L	103.3	90	110			
WG322706ICB	ICB	05/15/12 22:19				U	mg/L		-0.03	0.03			
WG322709													
WG322709CCV1	CCV	05/15/12 23:46	WI120515-7	1		.988	mg/L	98.8	90	110			
WG322709CCB1	CCB	05/15/12 23:48				U	mg/L		-0.03	0.03			
WG322709LFB	LFB	05/15/12 23:49	WI120211-3	1		1.056	mg/Kg	105.6	90	110			
WG322563PBS	PBS	05/15/12 23:50				U	mg/Kg		-0.15	0.15			
L94280-03AS	AS	05/15/12 23:52	WI120211-3	5	.29	5.54	mg/Kg	105	90	110			
WG322709CCV2	CCV	05/16/12 0:01	WI120515-7	1		.999	mg/L	99.9	90	110			
WG322709CCB2	CCB	05/16/12 0:02				U	mg/L		-0.03	0.03			
WG322709CCV3	CCV	05/16/12 0:15	WI120515-7	1		.992	mg/L	99.2	90	110			
WG322709CCB3	CCB	05/16/12 0:16				U	mg/L		-0.03	0.03			
L94281-18DUP	DUP	05/16/12 0:21			.24	.21	mg/Kg				13.3	20	RA
WG322709CCV4	CCV	05/16/12 0:28	WI120515-7	1		1.003	mg/L	100.3	90	110			
WG322709CCB4	CCB	05/16/12 0:29				U	mg/L		-0.03	0.03			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94281***

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322753													
WG322753ICV	ICV	05/16/12 13:11	WI111117-1	1.002		.997	mg/L	99.5	90	110			
WG322753ICB	ICB	05/16/12 13:12				U	mg/L		-0.15	0.15			
WG322753LFB	LFB	05/16/12 13:13	WI111101-3	1		1.081	mg/L	108.1	90	110			
WG322563PBS	PBS	05/16/12 13:15				U	mg/Kg		-0.9	0.9			
WG322753CCV1	CCV	05/16/12 13:25	WI111101-1	2		2.022	mg/L	101.1	90	110			
WG322753CCB1	CCB	05/16/12 13:26				U	mg/L		-0.15	0.15			
WG322753CCV2	CCV	05/16/12 13:38	WI111101-1	2		2.059	mg/L	103	90	110			
WG322753CCB2	CCB	05/16/12 13:39				U	mg/L		-0.15	0.15			
L94281-18MS	MS	05/16/12 13:43	NH3-WE5X	25	U	5.78	mg/Kg	115.6	75	125			
L94281-18DUP	DUP	05/16/12 13:44			U	U	mg/Kg				0	20	RA
WG322753CCV3	CCV	05/16/12 13:48	WI111101-1	2		2.044	mg/L	102.2	90	110			
WG322753CCB3	CCB	05/16/12 13:49				U	mg/L		-0.15	0.15			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322412													
WG322412ICV	ICV	05/09/12 23:17	WI120424-1	4		3.81	mg/L	95.3	90	110			
WG322412ICB	ICB	05/09/12 23:18				U	mg/L		-0.3	0.3			
WG322306PBS1	PBS	05/09/12 23:20				U	%		-0.06	0.06			
WG322306LFB1	LFB	05/09/12 23:21	WI120215-4	2.5		2.41	%	96.4	85	115			
WG322412CCV1	CCV	05/09/12 23:31	WI120412-1	5		4.85	mg/L	97	90	110			
WG322412CCB1	CCB	05/09/12 23:32				U	mg/Kg		-0.3	0.3			
WG322412CCV2	CCV	05/09/12 23:44	WI120412-1	5		4.75	mg/L	95	90	110			
WG322412CCB2	CCB	05/09/12 23:46				U	mg/Kg		-0.3	0.3			
WG322306PBS2	PBS	05/09/12 23:51				U	%		-0.006	0.006			
WG322306LFB2	LFB	05/09/12 23:52	WI120215-4	2.5		2.4	%	96	85	115			
L94280-16MS	MS	05/09/12 23:55	WI120215-4	.04	.133	.1779	%	112.3	75	125			
L94280-17DUP	DUP	05/09/12 23:57			.1	.0887	%				12	20	
WG322412CCV3	CCV	05/09/12 23:58	WI120412-1	5		4.62	mg/L	92.4	90	110			
WG322412CCB3	CCB	05/09/12 23:59				U	mg/Kg		-0.3	0.3			
WG322412CCV4	CCV	05/10/12 0:14	WI120412-1	5		4.63	mg/L	92.6	90	110			
WG322412CCB4	CCB	05/10/12 0:15				U	mg/Kg		-0.3	0.3			
WG322557													
WG322557ICV	ICV	05/12/12 14:09	WI120424-1	4		3.65	mg/L	91.3	90	110			
WG322557ICB	ICB	05/12/12 14:10				.12	mg/L		-0.3	0.3			
WG322368PBS	PBS	05/12/12 14:12				U	%		-0.006	0.006			
WG322368LFB	LFB	05/12/12 14:13	WI120215-4	2.5		2.55	%	102	85	115			
L94281-17MS	MS	05/12/12 14:15	WI120215-4	.055	.094	.1454	%	93.5	75	125			
L94281-18DUP	DUP	05/12/12 14:17			.083	.0862	%				3.8	20	
WG322557CCV1	CCV	05/12/12 14:23	WI120412-1	5		5.13	mg/L	102.6	90	110			
WG322557CCB1	CCB	05/12/12 14:24				.17	mg/Kg		-0.3	0.3			
WG322557CCV2	CCV	05/12/12 14:36	WI120412-1	5		5.17	mg/L	103.4	90	110			
WG322557CCB2	CCB	05/12/12 14:38				.15	mg/Kg		-0.3	0.3			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94281***

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322603													
WG322603ICV	ICV	05/15/12 11:43	PCN38642	4		3.97	units	99.3	97	103			
L94281-01DUP	DUP	05/15/12 12:12			4.9	4.91	units				0.2	20	
WG322603CCV1	CCV	05/15/12 14:22	PCN38642	4		4.04	units	101	97	103			
WG322603CCV2	CCV	05/15/12 17:01	PCN38642	4		4.08	units	102	97	103			
WG322603CCV3	CCV	05/15/12 17:30	PCN38642	4		4	units	100	97	103			

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322502													
WG322502ICV	ICV	05/12/12 0:56	II120430-5	20		19.98	mg/L	99.9	90	110			
WG322502ICB	ICB	05/12/12 0:59				U	mg/L		-0.9	0.9			
WG322502PQV	PQV	05/12/12 1:03	II120430-2	1.5		1.54	mg/L	102.7	70	130			
WG322502ICSAB	ICSAB	05/12/12 1:06	II120217-3	25		25.21	mg/L	100.8	80	120			
WG322436PBS	PBS	05/12/12 1:12				U	mg/Kg		-90	90			
WG322436LCSS	LCSS	05/12/12 1:15	PCN39540	2490		2485	mg/Kg		1740	3230			
WG322436LCSSD	LCSSD	05/12/12 1:18	PCN39540	2490		2572	mg/Kg		1740	3230	3.4	20	
L94281-01MS	MS	05/12/12 1:24	II120509-2	10091.83617	3080	12191	mg/Kg	90.3	75	125			
L94281-01MSD	MSD	05/12/12 1:27	II120509-2	10091.83617	3080	16200	mg/Kg	130	75	125	28.24	20	M1 RD
WG322502CCV1	CCV	05/12/12 1:42	II120430-6	10		9.85	mg/L	98.5	90	110			
WG322502CCB1	CCB	05/12/12 1:45				U	mg/L		-0.9	0.9			
L94281-06SDL	SDL	05/12/12 1:51			2590	2865	mg/Kg				10.6	10	ZH
WG322502CCV2	CCV	05/12/12 2:19	II120430-6	10		9.86	mg/L	98.6	90	110			
WG322502CCB2	CCB	05/12/12 2:22				U	mg/L		-0.9	0.9			
WG322502CCV3	CCV	05/12/12 2:43	II120430-6	10		9.99	mg/L	99.9	90	110			
WG322502CCB3	CCB	05/12/12 2:47				U	mg/L		-0.9	0.9			

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322562													
WG322562PBS	PBS	05/16/12 9:00				U	%		99.9	100.1			
L94281-20DUP	DUP	05/17/12 12:00			97.2	96.78	%				0.4	20	

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L94281***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-01	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-02	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-03	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-04	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Freeport-McMoRan - Chino Mines Company ACZ Project ID: ***L94281***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-05	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-06	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-07	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-08	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94281-09	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-10	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-11	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-12	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-13	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94281-14	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-15	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-16	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-17	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-18	WG322502	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94281-19	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94281-20	WG322731	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322502	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94281
Date Received: 04/30/2012 09:32
Received By: ksj
Date Printed: 5/1/2012

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (℃)	Rad (µR/hr)
Na15246		10.7	15
Na15247		9.5	16
Na15248		8.9	16
Na15250		10	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94281
Date Received: 04/30/2012 09:32
Received By: ksj
Date Printed: 5/1/2012

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L94281-01	STS-AMD-2012S-NE5 0-									X		☐
L94281-02	STS-AMD-2012S-NE6 0-									X		☐
L94281-03	STS-AMD-2012S-NE7 0-									X		☐
L94281-04	STS-AMD-2012S-NE8 0-									X		☐
L94281-05	STS-AMD-2012S-WREF1									X		☐
L94281-06	STS-AMD-2012S-WREF2									X		☐
L94281-07	STS-AMD-2012S-WREF1									X		☐
L94281-08	STS-AMD-2012S-WREF2									X		☐
L94281-09	STS-AMD-2012S-WREF3									X		☐
L94281-10	STS-AMD-2012S-WREF4									X		☐
L94281-11	STS-AMD-2012S-WREF5									X		☐
L94281-12	STS-AMD-2012S-WREF6									X		☐
L94281-13	STS-AMD-2012S-WREF7									X		☐
L94281-14	STS-AMD-2012S-WREF8									X		☐
L94281-15	STS-AMD-2012S-EREF1									X		☐
L94281-16	STS-AMD-2012S-EREF2									X		☐
L94281-17	STS-AMD-2012S-EREF1									X		☐
L94281-18	STS-AMD-2012S-EREF2									X		☐
L94281-19	STS-AMD-2012S-EREF3									X		☐
L94281-20	STS-AMD-2012S-EREF4									X		☐

Sample Container Preservation Legend

Abbreviation	**Description**	**Container Type**	**Preservative/Limits**
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc. L94281

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012S-NE5 0-6	4.25.12 10:35	SO	1	x	x	x					
STS-AMD-2012S-NE6 0-6	4.25.12 10:40	SO	1	x	x	x					
STS-AMD-2012S-NE7 0-6	4.25.12 10:43	SO	1	x	x	x					
STS-AMD-2012S-NE8 0-6	4.25.12 10:45	SO	1	x	x	x					
STS-AMD-2012S-WREF1 0-6	4.26.12 10:45	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-WREF2 0-6	4.26.12 11:00	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-WREF1 18-24	4.26.12 10:55	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-WREF2 18-24	4.26.12 11:05	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-WREF3 0-6	4.26.12 11:10	SO	1	x	x	x					
STS-AMD-2012S-WREF4 0-6	4.26.12 11:15	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME
	4.26.12 1530	ALK 4/30/12	0900

L94281 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

5

ACZ Laboratories, Inc. L94281

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION — **ANALYSES REQUESTED** *(attach list or use quote number)*

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)
STS-AMD-2012S-WREF5 0-6	4.26.12 11:20	SO	1	x	x	x				
STS-AMD-2012S-WREF6 0-6	4.26.12 11:25	SO	1	x	x	x				
STS-AMD-2012S-WREF7 0-6	4.26.12 11:30	SO	1	x	x	x				
STS-AMD-2012S-WREF8 0-6	4.26.12 11:35	SO	1	x	x	x				
STS-AMD-2012S-EREF1 0-6	4.24.12 17:00	SO	1	x	x	x	x	x	x	x
STS-AMD-2012S-EREF2 0-6	4.24.12 17:20	SO	1	x	x	x	x	x	x	x
STS-AMD-2012S-EREF1 6-12	4.24.12 17:05	SO	1	x	x	x	x	x	x	x
STS-AMD-2012S-EREF2 6-12	4.24.12 17:25	SO	1	x	x	x	x	x	x	x
STS-AMD-2012S-EREF3 0-6	4.24.12 17:35	SO	1	x	x	x				
STS-AMD-2012S-EREF4 0-6	4.24.12 17:35	SO	1	x	x	x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.26.12 1330	AUK 4/30/12	0900

6

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 22, 2012

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley, Sheri Fling

Project ID: ZN023C
ACZ Project ID: L94280

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 30, 2012. This project has been assigned to ACZ's project number, L94280. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L94280. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 22, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94280-01***
Project ID:	ZN023C	Date Sampled:	*04/24/12 18:23*
Sample ID:	STS-AMD-2012S-E7 0-6	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 15:40	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.14		*	mg/L	0.01	0.05	05/15/12 16:50	aeb
Copper, total (3050)	M6010B ICP	276		*	mg/Kg	1	5	05/11/12 23:14	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	05/15/12 11:27	bsu
Solids, Percent	CLPSOW390, PART F, D-98	88.5		*	%	0.1	0.5	05/14/12 11:25	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:00	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 10:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 11:30	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:00	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 23:07	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-E8 0-6

ACZ Sample ID: ***L94280-02***
Date Sampled: *04/24/12 18:25*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:18	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.18		*	mg/L	0.01	0.05	05/15/12 17:00	aeb
Copper, total (3050)	M6010B ICP	1080		*	mg/Kg	1	5	05/11/12 23:23	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.5		*	units	0.1	0.1	05/15/12 11:56	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.3		*	%	0.1	0.5	05/14/12 12:51	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:06	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 11:40	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:09	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 3:11	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-N1 0-6

ACZ Sample ID: ***L94280-03***
Date Sampled: *04/25/12 13:35*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:31	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8310		*	mg/Kg	20	100	05/11/12 23:30	jjc
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	05/15/12 17:03	aeb
Copper, total (3050)	M6010B ICP	325		*	mg/Kg	1	5	05/11/12 23:30	jjc
Potassium, total (3050)	M6010B ICP	2760		*	mg/Kg	30	200	05/11/12 23:30	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.3		*	units	0.1	0.1	05/15/12 12:11	bsu
Solids, Percent	CLPSOW390, PART F, D-98	95.7		*	%	0.1	0.5	05/14/12 14:17	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:12	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 11:45	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:18	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 9:18	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 4:32	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 9:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.8			mg/Kg	0.1	0.5	05/22/12 11:44	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.1		*	mg/Kg	0.1	0.5	05/15/12 23:51	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.29	B	*	mg/Kg	0.05	0.3	05/15/12 23:51	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:16	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.074		*	%	0.002	0.01	05/09/12 23:40	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-N2 0-6

ACZ Sample ID: ***L94280-04***
Date Sampled: *04/25/12 14:00*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:43	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10100		*	mg/Kg	20	100	05/11/12 23:33	jjc
Copper (1312)	M6010B ICP	1.11		*	mg/L	0.01	0.05	05/15/12 17:06	aeb
Copper, total (3050)	M6010B ICP	889		*	mg/Kg	1	5	05/11/12 23:33	jjc
Potassium, total (3050)	M6010B ICP	5540		*	mg/Kg	30	200	05/11/12 23:33	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.3		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.0		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/15/12 12:25	bsu
Solids, Percent	CLPSOW390, PART F, D-98	96.7		*	%	0.1	0.5	05/14/12 15:42	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:18	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 11:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 11:51	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:28	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 9:28	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 5:54	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 9:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	40			mg/Kg	1	5	05/22/12 11:44	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	44		*	mg/Kg	1	5	05/15/12 23:54	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.6		*	mg/Kg	0.5	3	05/15/12 23:54	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.1	B	*	mg/Kg	0.3	3	05/16/12 13:17	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.271		*	%	0.002	0.01	05/09/12 23:41	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-05***
Sample ID:	STS-AMD-2012S-N3 0-6	Date Sampled:	*04/25/12 14:20*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:56	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9540		*	mg/Kg	20	100	05/11/12 23:42	jjc
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	05/15/12 17:09	aeb
Copper, total (3050)	M6010B ICP	200		*	mg/Kg	1	5	05/11/12 23:42	jjc
Potassium, total (3050)	M6010B ICP	2260		*	mg/Kg	30	200	05/11/12 23:42	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.1		*	units	0.1	0.1	05/15/12 12:40	bsu
Solids, Percent	CLPSOW390, PART F, D-98	91.9		*	%	0.1	0.5	05/14/12 17:08	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:25	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 12:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 11:56	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:37	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 9:37	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 7:15	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 10:00	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.9			mg/Kg	0.1	0.5	05/22/12 11:44	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.1		*	mg/Kg	0.1	0.5	05/15/12 23:55	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.23	B	*	mg/Kg	0.05	0.3	05/15/12 23:55	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:18	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.095		*	%	0.002	0.01	05/09/12 23:42	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-06***
Sample ID:	STS-AMD-2012S-N1 18-	Date Sampled:	*04/25/12 13:45*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:09	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8040		*	mg/Kg	20	100	05/11/12 23:45	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	05/15/12 17:12	aeb
Copper, total (3050)	M6010B ICP	67		*	mg/Kg	1	5	05/11/12 23:45	jjc
Potassium, total (3050)	M6010B ICP	2410		*	mg/Kg	30	200	05/11/12 23:45	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	05/15/12 12:54	bsu
Solids, Percent	CLPSOW390, PART F, D-98	87.8		*	%	0.1	0.5	05/14/12 18:34	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:31	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 12:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:01	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:47	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 9:47	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 8:36	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 10:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	92			mg/Kg	1	5	05/22/12 11:44	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	92		*	mg/Kg	1	5	05/16/12 0:22	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.22	B	*	mg/Kg	0.05	0.3	05/15/12 23:56	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.5	B	*	mg/Kg	0.3	3	05/16/12 13:19	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.064		*	%	0.002	0.01	05/09/12 23:43	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94280-07***
Project ID:	ZN023C	Date Sampled:	*04/25/12 14:10*
Sample ID:	STS-AMD-2012S-N2 18-	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:22	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8470		*	mg/Kg	20	100	05/11/12 23:48	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	05/15/12 17:21	aeb
Copper, total (3050)	M6010B ICP	70		*	mg/Kg	1	5	05/11/12 23:48	jjc
Potassium, total (3050)	M6010B ICP	2510		*	mg/Kg	30	200	05/11/12 23:48	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	05/15/12 13:08	bsu
Solids, Percent	CLPSOW390, PART F, D-98	84.1		*	%	0.1	0.5	05/14/12 20:00	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:37	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 12:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:06	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 9:56	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 9:56	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 11:19	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 10:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	93			mg/Kg	1	5	05/22/12 11:44	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	93		*	mg/Kg	1	5	05/16/12 0:23	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	05/15/12 23:57	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.4	B	*	mg/Kg	0.3	3	05/16/12 13:20	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.054		*	%	0.002	0.01	05/09/12 23:47	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-N3 18-

ACZ Sample ID: ***L94280-08***
Date Sampled: *04/25/12 14:45*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:34	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	15500		*	mg/Kg	20	100	05/11/12 23:51	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	05/15/12 17:24	aeb
Copper, total (3050)	M6010B ICP	98		*	mg/Kg	1	5	05/11/12 23:51	jjc
Potassium, total (3050)	M6010B ICP	2330		*	mg/Kg	30	200	05/11/12 23:51	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	05/15/12 13:23	bsu
Solids, Percent	CLPSOW390, PART F, D-98	79.4		*	%	0.1	0.5	05/14/12 21:25	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:44	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:12	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 10:06	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 10:06	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 12:40	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 11:00	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	13.6			mg/Kg	0.1	0.5	05/22/12 11:44	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	13.7		*	mg/Kg	0.1	0.5	05/15/12 23:58	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.12	B	*	mg/Kg	0.05	0.3	05/15/12 23:58	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:21	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.060		*	%	0.002	0.009	05/09/12 23:48	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94280-09***
Project ID:	ZN023C	Date Sampled:	*04/25/12 13:25*
Sample ID:	STS-AMD-2012S-N4 0-6	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:47	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.60		*	mg/L	0.01	0.05	05/15/12 17:27	aeb
Copper, total (3050)	M6010B ICP	738		*	mg/Kg	1	5	05/11/12 23:54	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	05/15/12 13:37	bsu
Solids, Percent	CLPSOW390, PART F, D-98	92.1		*	%	0.1	0.5	05/14/12 22:51	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:50	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:17	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 10:15	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 14:01	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-10***
Sample ID:	STS-AMD-2012S-N5 0-6	Date Sampled:	*04/25/12 13:40*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:00	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.33		*	mg/L	0.01	0.05	05/15/12 17:30	aeb
Copper, total (3050)	M6010B ICP	1180		*	mg/Kg	1	5	05/11/12 23:57	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	05/15/12 14:06	bsu
Solids, Percent	CLPSOW390, PART F, D-98	94.8		*	%	0.1	0.5	05/15/12 0:17	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 13:56	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 13:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:22	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 10:25	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 15:23	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94280-11***
Project ID:	ZN023C	Date Sampled:	*04/25/12 13:45*
Sample ID:	STS-AMD-2012S-N6 0-6	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:12	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.60		*	mg/L	0.01	0.05	05/15/12 17:33	aeb
Copper, total (3050)	M6010B ICP	1410		*	mg/Kg	1	5	05/12/12 0:00	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.1		*	units	0.1	0.1	05/15/12 14:21	bsu
Solids, Percent	CLPSOW390, PART F, D-98	96.7		*	%	0.1	0.5	05/15/12 1:42	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:03	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 14:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:27	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 10:34	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 16:44	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-12***
Sample ID:	STS-AMD-2012S-N7 0-6	Date Sampled:	*04/25/12 13:50*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:25	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.25		*	mg/L	0.01	0.05	05/15/12 17:37	aeb
Copper, total (3050)	M6010B ICP	869		*	mg/Kg	1	5	05/12/12 0:03	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.0		*	units	0.1	0.1	05/15/12 14:35	bsu
Solids, Percent	CLPSOW390, PART F, D-98	96.6		*	%	0.1	0.5	05/15/12 3:08	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:09	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 14:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:33	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 10:44	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 18:05	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	**L94280-13**
Sample ID:	STS-AMD-2012S-N8 0-6	Date Sampled:	04/25/12 13:55
		Date Received:	04/30/12
		Sample Matrix:	Soil

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:38	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.42		*	mg/L	0.01	0.05	05/15/12 17:40	aeb
Copper, total (3050)	M6010B ICP	1740		*	mg/Kg	1	5	05/12/12 0:06	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.5		*	units	0.1	0.1	05/15/12 14:50	bsu
Solids, Percent	CLPSOW390, PART F, D-98	94.3		*	%	0.1	0.5	05/15/12 4:34	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:15	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 14:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:38	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 10:53	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 19:26	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-14***
Sample ID:	STS-AMD-2012S-NE1 0-	Date Sampled:	*04/25/12 08:45*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:50	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4630		*	mg/Kg	20	100	05/12/12 0:09	jjc
Copper (1312)	M6010B ICP	0.69		*	mg/L	0.01	0.05	05/15/12 17:43	aeb
Copper, total (3050)	M6010B ICP	2470		*	mg/Kg	1	5	05/12/12 0:09	jjc
Potassium, total (3050)	M6010B ICP	3200		*	mg/Kg	30	200	05/12/12 0:09	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	4.8		*	units	0.1	0.1	05/15/12 15:04	bsu
Solids, Percent	CLPSOW390, PART F, D-98	94.4		*	%	0.1	0.5	05/15/12 6:00	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:22	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 15:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:43	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:03	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 11:03	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 20:48	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 11:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	17.0			mg/Kg	0.1	0.5	05/22/12 11:45	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	17.2		*	mg/Kg	0.1	0.5	05/15/12 23:59	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.16	B	*	mg/Kg	0.05	0.3	05/15/12 23:59	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.0	B	*	mg/Kg	0.3	3	05/16/12 13:22	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.171		*	%	0.002	0.009	05/09/12 23:49	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-15***
Sample ID:	STS-AMD-2012S-NE2 0-	Date Sampled:	*04/25/12 09:25*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:33	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:03	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4020		*	mg/Kg	20	100	05/12/12 0:18	jjc
Copper (1312)	M6010B ICP	0.91		*	mg/L	0.01	0.05	05/15/12 17:46	aeb
Copper, total (3050)	M6010B ICP	2950		*	mg/Kg	1	5	05/12/12 0:18	jjc
Potassium, total (3050)	M6010B ICP	3050		*	mg/Kg	30	200	05/12/12 0:18	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	4.4		*	units	0.1	0.1	05/15/12 15:19	bsu
Solids, Percent	CLPSOW390, PART F, D-98	93.7		*	%	0.1	0.5	05/15/12 7:25	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:28	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 15:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:48	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:12	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 11:12	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 22:09	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 11:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	16.1			mg/Kg	0.1	0.5	05/22/12 11:45	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	16.2		*	mg/Kg	0.1	0.5	05/16/12 0:03	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	05/16/12 0:03	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	3.7		*	mg/Kg	0.3	3	05/16/12 13:24	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.121		*	%	0.002	0.01	05/09/12 23:50	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN023C
Sample ID: STS-AMD-2012S-NE3 0-

ACZ Sample ID: ***L94280-16***
Date Sampled: *04/25/12 09:50*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:33	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:16	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4290		*	mg/Kg	20	100	05/12/12 0:21	jjc
Copper (1312)	M6010B ICP	0.96		*	mg/L	0.01	0.05	05/15/12 17:49	aeb
Copper, total (3050)	M6010B ICP	2130		*	mg/Kg	1	5	05/12/12 0:21	jjc
Potassium, total (3050)	M6010B ICP	4420		*	mg/Kg	30	200	05/12/12 0:21	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	05/15/12 15:33	bsu
Solids, Percent	CLPSOW390, PART F, D-98	93.9		*	%	0.1	0.5	05/15/12 8:51	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:34	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 15:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:54	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:22	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 11:22	ndj
Synthetic Precip. Leaching Procedure	M1312							05/10/12 23:30	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 12:00	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	28.2			mg/Kg	0.4	2	05/22/12 11:45	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	28.4		*	mg/Kg	0.4	2	05/16/12 0:24	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.25	B	*	mg/Kg	0.05	0.3	05/16/12 0:04	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	8.1		*	mg/Kg	0.3	3	05/16/12 13:27	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.133		*	%	0.002	0.008	05/09/12 23:53	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-NE1 12

ACZ Sample ID: ***L94280-17***
Date Sampled: *04/25/12 09:05*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:33	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:29	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7080		*	mg/Kg	20	100	05/12/12 0:25	jjc
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	05/15/12 18:01	aeb
Copper, total (3050)	M6010B ICP	82		*	mg/Kg	1	5	05/12/12 0:25	jjc
Potassium, total (3050)	M6010B ICP	2840		*	mg/Kg	30	200	05/12/12 0:25	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	6.3		*	units	0.1	0.1	05/15/12 15:47	bsu
Solids, Percent	CLPSOW390, PART F, D-98	77.7		*	%	0.1	0.5	05/15/12 10:17	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:41	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 16:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 12:59	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:31	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 11:31	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 2:13	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 12:20	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.1			mg/Kg	0.1	0.5	05/22/12 11:45	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.4		*	mg/Kg	0.1	0.5	05/16/12 0:05	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.28	B	*	mg/Kg	0.05	0.3	05/16/12 0:05	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:28	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.100		*	%	0.002	0.01	05/09/12 23:56	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94280-18***
Project ID:	ZN023C	Date Sampled:	*04/25/12 09:35*
Sample ID:	STS-AMD-2012S-NE2 18	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:41	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7040		*	mg/Kg	20	100	05/12/12 0:28	jjc
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	05/15/12 18:04	aeb
Copper, total (3050)	M6010B ICP	150		*	mg/Kg	1	5	05/12/12 0:28	jjc
Potassium, total (3050)	M6010B ICP	3990		*	mg/Kg	30	200	05/12/12 0:28	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	05/15/12 16:02	bsu
Solids, Percent	CLPSOW390, PART F, D-98	74.6		*	%	0.1	0.5	05/15/12 11:42	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:47	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 16:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 13:04	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:40	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 11:40	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 3:34	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 12:40	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.4			mg/Kg	0.1	0.5	05/22/12 11:45	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	8.6		*	mg/Kg	0.1	0.5	05/16/12 0:07	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.19	B	*	mg/Kg	0.05	0.3	05/16/12 0:07	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:29	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.088		*	%	0.002	0.01	05/10/12 0:00	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94280-19***
Project ID:	ZN023C	Date Sampled:	*04/25/12 10:05*
Sample ID:	STS-AMD-2012S-NE3 18	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:34	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:54	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10200		*	mg/Kg	20	100	05/12/12 0:31	jjc
Copper (1312)	M6010B ICP	0.04	B	*	mg/L	0.01	0.05	05/15/12 18:07	aeb
Copper, total (3050)	M6010B ICP	124		*	mg/Kg	1	5	05/12/12 0:31	jjc
Potassium, total (3050)	M6010B ICP	4360		*	mg/Kg	30	200	05/12/12 0:31	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/10/12 9:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	05/10/12 9:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/15/12 16:16	bsu
Solids, Percent	CLPSOW390, PART F, D-98	77.5		*	%	0.1	0.5	05/15/12 13:08	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 14:53	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 16:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 13:09	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:50	ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/09/12 11:50	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 4:55	brd
Water Extraction	ASA No. 9 10-2.3.2							05/14/12 13:00	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	5.5			mg/Kg	0.1	0.5	05/22/12 11:45	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.6		*	mg/Kg	0.1	0.5	05/16/12 0:08	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.12	B	*	mg/Kg	0.05	0.3	05/16/12 0:08	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/16/12 13:30	lhb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.064		*	%	0.002	0.01	05/10/12 0:01	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94280-20***
Sample ID:	STS-AMD-2012S-NE4 0-	Date Sampled:	*04/25/12 10:30*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 20:07	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.71		*	mg/L	0.01	0.05	05/15/12 18:10	aeb
Copper, total (3050)	M6010B ICP	2780		*	mg/Kg	1	5	05/12/12 0:34	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.8		*	units	0.1	0.1	05/15/12 16:45	bsu
Solids, Percent	CLPSOW390, PART F, D-98	95.6		*	%	0.1	0.5	05/15/12 14:34	nrc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/07/12 15:00	nrc
Digestion - Hot Plate	M3050B ICP							05/10/12 17:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/14/12 13:15	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/09/12 11:59	ndj
Synthetic Precip. Leaching Procedure	M1312							05/11/12 6:17	brd

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94280***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322521													
WG322521ICV	ICV	05/11/12 22:49	II120430-5	100		98.19	mg/L	98.2	90	110			
WG322521ICB	ICB	05/11/12 22:52				U	mg/L		-0.6	0.6			
WG322521PQV	PQV	05/11/12 22:56	II120430-2	1		1.03	mg/L	103	70	130			
WG322521ICSAB	ICSAB	05/11/12 22:59	II120217-3	250		246.1	mg/L	98.4	80	120			
WG322418PBS	PBS	05/11/12 23:05				U	mg/Kg		-60	60			
WG322418LCSS	LCSS	05/11/12 23:08	PCN39540	6140		5447	mg/Kg		5110	7180			
WG322418LCSSD	LCSSD	05/11/12 23:11	PCN39540	6140		5177	mg/Kg		5110	7180	5.1	20	
L94280-01MS	MS	05/11/12 23:17	II120509-2	6937.3974	10400	17024	mg/Kg	95.5	75	125			
L94280-01MSD	MSD	05/11/12 23:20	II120509-2	6937.3974	10400	12260	mg/Kg	26.8	75	125	32.54	20	M2 RD
L94280-02SDL	SDL	05/11/12 23:26			2980	3545	mg/Kg				19	10	ZH
WG322521CCV1	CCV	05/11/12 23:36	II120430-6	50		50.05	mg/L	100.1	90	110			
WG322521CCB1	CCB	05/11/12 23:39				U	mg/L		-0.6	0.6			
WG322521CCV2	CCV	05/12/12 0:12	II120430-6	50		49.52	mg/L	99	90	110			
WG322521CCB2	CCB	05/12/12 0:15				U	mg/L		-0.6	0.6			
WG322521CCV3	CCV	05/12/12 0:37	II120430-6	50		49.44	mg/L	98.9	90	110			
WG322521CCB3	CCB	05/12/12 0:40				U	mg/L		-0.6	0.6			

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322425													
WG322425LCSS	LCSS	05/10/12 9:00	PCN38836	4.19		4.1	%		80	120			
L94280-03DUP	DUP	05/10/12 9:00			1.1	1.1	%				0	20	
WG322425PBS	PBS	05/10/12 9:00				U	%		-0.3	0.3			

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322425													
L94280-03DUP	DUP	05/10/12 9:00			1	1	%				0	20	
WG322425PBS	PBS	05/10/12 9:00				U	%		-0.3	0.3			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94280***

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322644													
WG322644ICV	ICV	05/15/12 16:29	II120430-5	2		1.963	mg/L	98.2	90	110			
WG322644ICB	ICB	05/15/12 16:32				U	mg/L		-0.03	0.03			
WG322644PQV	PQV	05/15/12 16:35	II120430-2	.05		.049	mg/L	98	70	130			
WG322644ICSAB	ICSAB	05/15/12 16:38	II120217-3	.255		.248	mg/L	97.3	80	120			
WG322388PBS	PBS	05/15/12 16:44				U	mg/L		-0.03	0.03			
WG322388LFB	LFB	05/15/12 16:47	II120509-2	.5		.496	mg/L	99.2	85	115			
L94280-01MS	MS	05/15/12 16:54	II120509-2	.5	.14	.638	mg/L	99.6	75	125			
L94280-01MSD	MSD	05/15/12 16:57	II120509-2	.5	.14	.63	mg/L	98	75	125	1.26	20	
WG322644CCV1	CCV	05/15/12 17:15	II120430-6	1		.994	mg/L	99.4	90	110			
WG322644CCB1	CCB	05/15/12 17:18				U	mg/L		-0.03	0.03			
WG322644CCV2	CCV	05/15/12 17:52	II120430-6	1		.99	mg/L	99	90	110			
WG322644CCB2	CCB	05/15/12 17:55				U	mg/L		-0.03	0.03			
L94280-16SDL	SDL	05/15/12 17:58			.96	.95	mg/L				1	10	
L94280-20DUP	DUP	05/15/12 18:13			.71	1.269	mg/L				56.5	20	RD
WG322644CCV3	CCV	05/15/12 18:16	II120430-6	1		.986	mg/L	98.6	90	110			
WG322644CCB3	CCB	05/15/12 18:19				U	mg/L		-0.03	0.03			

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322521													
WG322521ICV	ICV	05/11/12 22:49	II120430-5	2		1.938	mg/L	96.9	90	110			
WG322521ICB	ICB	05/11/12 22:52				U	mg/L		-0.03	0.03			
WG322521PQV	PQV	05/11/12 22:56	II120430-2	.05		.047	mg/L	94	70	130			
WG322521ICSAB	ICSAB	05/11/12 22:59	II120217-3	.255		.241	mg/L	94.5	80	120			
WG322418PBS	PBS	05/11/12 23:05				U	mg/Kg		-3	3			
WG322418LCSS	LCSS	05/11/12 23:08	PCN39540	79.6		71.5	mg/Kg		66.7	92.4			
WG322418LCSSD	LCSSD	05/11/12 23:11	PCN39540	79.6		67.3	mg/Kg		66.7	92.4	6.1	20	
L94280-01MS	MS	05/11/12 23:17	II120509-2	51	276	297.5	mg/Kg	42.2	75	125			M3
L94280-01MSD	MSD	05/11/12 23:20	II120509-2	51	276	266.5	mg/Kg	-18.6	75	125	10.99	20	M3
L94280-02SDL	SDL	05/11/12 23:26			1080	1218.5	mg/Kg				12.8	10	ZH
WG322521CCV1	CCV	05/11/12 23:36	II120430-6	1		.979	mg/L	97.9	90	110			
WG322521CCB1	CCB	05/11/12 23:39				U	mg/L		-0.03	0.03			
WG322521CCV2	CCV	05/12/12 0:12	II120430-6	1		.974	mg/L	97.4	90	110			
WG322521CCB2	CCB	05/12/12 0:15				U	mg/L		-0.03	0.03			
WG322521CCV3	CCV	05/12/12 0:37	II120430-6	1		.975	mg/L	97.5	90	110			
WG322521CCB3	CCB	05/12/12 0:40				U	mg/L		-0.03	0.03			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94280***

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322706													
WG322706ICV	ICV	05/15/12 22:18	WI120405-3	2.416		2.527	mg/L	104.6	90	110			
WG322706ICB	ICB	05/15/12 22:19				U	mg/L		-0.06	0.06			
WG322709													
WG322709CCV1	CCV	05/15/12 23:46	WI120515-7	2		1.954	mg/L	97.7	90	110			
WG322709CCB1	CCB	05/15/12 23:48				U	mg/L		-0.06	0.06			
WG322709LFB	LFB	05/15/12 23:49	WI120211-3	2		2.064	mg/Kg	103.2	90	110			
WG322563PBS	PBS	05/15/12 23:50				.13	mg/Kg		-0.3	0.3			
L94280-03AS	AS	05/15/12 23:52	WI120211-3	10	1.1	11.7	mg/Kg	106	90	110			
WG322709CCV2	CCV	05/16/12 0:01	WI120515-7	2		1.977	mg/L	98.9	90	110			
WG322709CCB2	CCB	05/16/12 0:02				U	mg/L		-0.06	0.06			
WG322709CCV3	CCV	05/16/12 0:15	WI120515-7	2		1.951	mg/L	97.6	90	110			
WG322709CCB3	CCB	05/16/12 0:16				U	mg/L		-0.06	0.06			
L94281-18DUP	DUP	05/16/12 0:21			8.3	8.2	mg/Kg				1.2	20	
WG322709CCV4	CCV	05/16/12 0:28	WI120515-7	2		1.967	mg/L	98.4	90	110			
WG322709CCB4	CCB	05/16/12 0:29				U	mg/L		-0.06	0.06			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322706													
WG322706ICV	ICV	05/15/12 22:18	WI120405-3	.609		.629	mg/L	103.3	90	110			
WG322706ICB	ICB	05/15/12 22:19				U	mg/L		-0.03	0.03			
WG322709													
WG322709CCV1	CCV	05/15/12 23:46	WI120515-7	1		.988	mg/L	98.8	90	110			
WG322709CCB1	CCB	05/15/12 23:48				U	mg/L		-0.03	0.03			
WG322709LFB	LFB	05/15/12 23:49	WI120211-3	1		1.056	mg/Kg	105.6	90	110			
WG322563PBS	PBS	05/15/12 23:50				U	mg/Kg		-0.15	0.15			
L94280-03AS	AS	05/15/12 23:52	WI120211-3	5	.29	5.54	mg/Kg	105	90	110			
WG322709CCV2	CCV	05/16/12 0:01	WI120515-7	1		.999	mg/L	99.9	90	110			
WG322709CCB2	CCB	05/16/12 0:02				U	mg/L		-0.03	0.03			
WG322709CCV3	CCV	05/16/12 0:15	WI120515-7	1		.992	mg/L	99.2	90	110			
WG322709CCB3	CCB	05/16/12 0:16				U	mg/L		-0.03	0.03			
L94281-18DUP	DUP	05/16/12 0:21			.24	.21	mg/Kg				13.3	20	RA
WG322709CCV4	CCV	05/16/12 0:28	WI120515-7	1		1.003	mg/L	100.3	90	110			
WG322709CCB4	CCB	05/16/12 0:29				U	mg/L		-0.03	0.03			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94280***

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322753													
WG322753ICV	ICV	05/16/12 13:11	WI111117-1	1.002		.997	mg/L	99.5	90	110			
WG322753ICB	ICB	05/16/12 13:12				U	mg/L		-0.15	0.15			
WG322753LFB	LFB	05/16/12 13:13	WI111101-3	1		1.081	mg/L	108.1	90	110			
WG322563PBS	PBS	05/16/12 13:15				U	mg/Kg		-0.9	0.9			
WG322753CCV1	CCV	05/16/12 13:25	WI111101-1	2		2.022	mg/L	101.1	90	110			
WG322753CCB1	CCB	05/16/12 13:26				U	mg/L		-0.15	0.15			
WG322753CCV2	CCV	05/16/12 13:38	WI111101-1	2		2.059	mg/L	103	90	110			
WG322753CCB2	CCB	05/16/12 13:39				U	mg/L		-0.15	0.15			
L94281-18MS	MS	05/16/12 13:43	NH3-WE5X	25	U	5.78	mg/Kg	115.6	75	125			
L94281-18DUP	DUP	05/16/12 13:44			U	U	mg/Kg				0	20	RA
WG322753CCV3	CCV	05/16/12 13:48	WI111101-1	2		2.044	mg/L	102.2	90	110			
WG322753CCB3	CCB	05/16/12 13:49				U	mg/L		-0.15	0.15			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322412													
WG322412ICV	ICV	05/09/12 23:17	WI120424-1	4		3.81	mg/L	95.3	90	110			
WG322412ICB	ICB	05/09/12 23:18				U	mg/L		-0.3	0.3			
WG322306PBS1	PBS	05/09/12 23:20				U	%		-0.06	0.06			
WG322306LFB1	LFB	05/09/12 23:21	WI120215-4	2.5		2.41	%	96.4	85	115			
WG322412CCV1	CCV	05/09/12 23:31	WI120412-1	5		4.85	mg/L	97	90	110			
WG322412CCB1	CCB	05/09/12 23:32				U	mg/Kg		-0.3	0.3			
WG322412CCV2	CCV	05/09/12 23:44	WI120412-1	5		4.75	mg/L	95	90	110			
WG322412CCB2	CCB	05/09/12 23:46				U	mg/Kg		-0.3	0.3			
WG322306PBS2	PBS	05/09/12 23:51				U	%		-0.006	0.006			
WG322306LFB2	LFB	05/09/12 23:52	WI120215-4	2.5		2.4	%	96	85	115			
L94280-16MS	MS	05/09/12 23:55	WI120215-4	.04	.133	.1779	%	112.3	75	125			
L94280-17DUP	DUP	05/09/12 23:57			.1	.0887	%				12	20	
WG322412CCV3	CCV	05/09/12 23:58	WI120412-1	5		4.62	mg/L	92.4	90	110			
WG322412CCB3	CCB	05/09/12 23:59				U	mg/Kg		-0.3	0.3			
WG322412CCV4	CCV	05/10/12 0:14	WI120412-1	5		4.63	mg/L	92.6	90	110			
WG322412CCB4	CCB	05/10/12 0:15				U	mg/Kg		-0.3	0.3			

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322578													
WG322578ICV	ICV	05/15/12 11:13	PCN38642	4		3.97	units	99.3	97	103			
L94280-01DUP	DUP	05/15/12 11:42			7.4	7.48	units				1.1	20	
WG322578CCV1	CCV	05/15/12 13:52	PCN38642	4		4.04	units	101	97	103			
WG322578CCV2	CCV	05/15/12 16:31	PCN38642	4		4.09	units	102.3	97	103			
WG322578CCV3	CCV	05/15/12 17:00	PCN38642	4		4	units	100	97	103			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94280***

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322521													
WG322521ICV	ICV	05/11/12 22:49	II120430-5	20		19.76	mg/L	98.8	90	110			
WG322521ICB	ICB	05/11/12 22:52				U	mg/L		-0.9	0.9			
WG322521PQV	PQV	05/11/12 22:56	II120430-2	1.5		1.55	mg/L	103.3	70	130			
WG322521ICSAB	ICSAB	05/11/12 22:59	II120217-3	25		25.1	mg/L	100.4	80	120			
WG322418PBS	PBS	05/11/12 23:05				U	mg/Kg		-90	90			
WG322418LCSS	LCSS	05/11/12 23:08	PCN39540	2490		2454	mg/Kg		1740	3230			
WG322418LCSSD	LCSSD	05/11/12 23:11	PCN39540	2490		2303	mg/Kg		1740	3230	6.3	20	
L94280-01MS	MS	05/11/12 23:17	II120509-2	10191.75534	5370	16014	mg/Kg	104.4	75	125			
L94280-01MSD	MSD	05/11/12 23:20	II120509-2	10191.75534	5370	12352	mg/Kg	68.5	75	125	25.82	20	M2 RD
L94280-02SDL	SDL	05/11/12 23:26			2910	3265	mg/Kg				12.2	10	ZH
WG322521CCV1	CCV	05/11/12 23:36	II120430-6	10		9.85	mg/L	98.5	90	110			
WG322521CCB1	CCB	05/11/12 23:39				U	mg/L		-0.9	0.9			
WG322521CCV2	CCV	05/12/12 0:12	II120430-6	10		9.78	mg/L	97.8	90	110			
WG322521CCB2	CCB	05/12/12 0:15				U	mg/L		-0.9	0.9			
WG322521CCV3	CCV	05/12/12 0:37	II120430-6	10		9.77	mg/L	97.7	90	110			
WG322521CCB3	CCB	05/12/12 0:40				U	mg/L		-0.9	0.9			

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322561													
WG322561PBS	PBS	05/14/12 10:00				U	%		99.9	100.1			
L94280-20DUP	DUP	05/15/12 16:00			95.6	96.71	%				1.2	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-01	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94280-02	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-03	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-04	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-05	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-06	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-07	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-08	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94280-09	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-10	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94280-11	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94280-12	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L94280-13	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-14	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-15	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-16	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-17	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L94280***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-18	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94280-19	WG322521	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG322425	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322709	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322753	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94280-20	WG322644	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG322521	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94280
Date Received: 04/30/2012 09:31
Received By: ksj
Date Printed: 5/1/2012

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
Na15246, Na1		10.7, 9.6	15, 16
Na15247		9.5	16
Na15248		8.9	16
Na15249		9.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94280
Date Received: 04/30/2012 09:31
Received By: ksj
Date Printed: 5/1/2012

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L94280-01	STS-AMD-2012S-E7 0-6									X		☐
L94280-02	STS-AMD-2012S-E8 0-6									X		☐
L94280-03	STS-AMD-2012S-N1 0-6									X		☐
L94280-04	STS-AMD-2012S-N2 0-6									X		☐
L94280-05	STS-AMD-2012S-N3 0-6									X		☐
L94280-06	STS-AMD-2012S-N1 18-									X		☐
L94280-07	STS-AMD-2012S-N2 18-									X		☐
L94280-08	STS-AMD-2012S-N3 18-									X		☐
L94280-09	STS-AMD-2012S-N4 0-6									X		☐
L94280-10	STS-AMD-2012S-N5 0-6									X		☐
L94280-11	STS-AMD-2012S-N6 0-6									X		☐
L94280-12	STS-AMD-2012S-N7 0-6									X		☐
L94280-13	STS-AMD-2012S-N8 0-6									X		☐
L94280-14	STS-AMD-2012S-NE1 0-									X		☐
L94280-15	STS-AMD-2012S-NE2 0-									X		☐
L94280-16	STS-AMD-2012S-NE3 0-									X		☐
L94280-17	STS-AMD-2012S-NE1 12									X		☐
L94280-18	STS-AMD-2012S-NE2 18									X		☐
L94280-19	STS-AMD-2012S-NE3 18									X		☐
L94280-20	STS-AMD-2012S-NE4 0-									X		☐

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc. L94280

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified. YES ☒ NO ☐

Are samples for CO DW Compliance Monitoring? If yes, please include state forms. Results will be reported to PQL. YES ☐ NO ☒

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Matt Bauer

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012S-E7 0-6	4.24.12 18:23	SO	1	X	X	X					
STS-AMD-2012S-E8 0-6	4.24.12 18:25	SO	1	X	X	X					
STS-AMD-2012S-N1 0-6	4.25.12 13:35	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-N2 0-6	4.25.12 14:00	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-N3 0-6	4.25.12 14:20	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-N1 18-24	4.25.12 13:45	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-N2 18-24	4.25.12 14:10	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-N3 18-24	4.25.12 14:45	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012S-N4 0-6	4.25.12 13:25	SO	1	X	X	X					
STS-AMD-2012S-N5 0-6	4.25.12 13:40	SO	1	X	X	X					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE TIME	RECEIVED BY:	DATE TIME
	4.26.12 1530	ALK 4/30/12	0900

L94280 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

3

ACZ Laboratories, Inc. L94280

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS
E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carobn	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012S-N6 0-6	4.25.12 13:45	SO	1	x	x	x					
STS-AMD-2012S-N7 0-6	4.25.12 13:50	SO	1	x	x	x					
STS-AMD-2012S-N8 0-6	4.25.12 13:55	SO	1	x	x	x					
STS-AMD-2012S-NE1 0-6	4.25.12 08:45	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NE2 0-6	4.25.12 09:25	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NE3 0-6	4.25.12 09:50	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NE1 12-18	4.25.12 09:05	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NE2 18-24	4.25.12 09:35	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NE3 18-24	4.25.12 10:05	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-NE4 0-6	4.25.12 10:30	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.26.12 1330	AK 4/30/12	0900

4

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 22, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley, Sheri Fling

Project ID: ZN023C
ACZ Project ID: L94278

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 30, 2012. This project has been assigned to ACZ's project number, L94278. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L94278. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 22, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-W1 0-6

ACZ Sample ID: ***L94278-01***
Date Sampled: *04/26/12 09:15*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:30	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 15:40	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8750			mg/Kg	20	100	05/09/12 20:47	aeb
Copper (1312)	M6010B ICP	0.10			mg/L	0.01	0.05	05/15/12 18:57	aeb
Copper, total (3050)	M6010B ICP	1830		*	mg/Kg	1	5	05/09/12 20:47	aeb
Potassium, total (3050)	M6010B ICP	3080			mg/Kg	30	200	05/09/12 20:47	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/14/12 10:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	05/14/12 10:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/14/12 16:11	bsu
Solids, Percent	CLPSOW390, PART F, D-98	96.1		*	%	0.1	0.5	05/17/12 10:03	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:00	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 10:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:30	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:00	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:00	ndj
Synthetic Precip. Leaching Procedure	M1312							05/08/12 17:42	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 13:16	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.9			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.1		*	mg/Kg	0.1	0.5	05/08/12 23:14	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.18	B	*	mg/Kg	0.05	0.3	05/08/12 23:14	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:12	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.083		*	%	0.002	0.009	05/09/12 23:22	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-02***
Sample ID:	STS-AMD-2012S-W2 0-6	Date Sampled:	*04/26/12 09:35*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:30	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:05	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6240			mg/Kg	20	100	05/09/12 20:56	aeb
Copper (1312)	M6010B ICP	0.05			mg/L	0.01	0.05	05/15/12 19:04	aeb
Copper, total (3050)	M6010B ICP	741		*	mg/Kg	1	5	05/09/12 20:56	aeb
Potassium, total (3050)	M6010B ICP	3270			mg/Kg	30	200	05/09/12 20:56	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/14/12 11:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	05/14/12 11:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	05/14/12 16:16	bsu
Solids, Percent	CLPSOW390, PART F, D-98	95.0		*	%	0.1	0.5	05/17/12 11:12	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:03	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 11:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:36	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:06	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:05	ndj
Synthetic Precip. Leaching Procedure	M1312							05/08/12 19:36	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 13:32	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.2			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.4		*	mg/Kg	0.1	0.5	05/08/12 23:16	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.19	B	*	mg/Kg	0.05	0.3	05/08/12 23:16	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:14	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.065		*	%	0.002	0.008	05/10/12 0:09	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-03***
Sample ID:	STS-AMD-2012S-W3 0-6	Date Sampled:	*04/26/12 09:45*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:30	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:43	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	14100			mg/Kg	20	100	05/09/12 20:59	aeb
Copper (1312)	M6010B ICP	0.19			mg/L	0.01	0.05	05/15/12 19:13	aeb
Copper, total (3050)	M6010B ICP	2170		*	mg/Kg	1	5	05/09/12 20:59	aeb
Potassium, total (3050)	M6010B ICP	3660			mg/Kg	30	200	05/09/12 20:59	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	05/14/12 11:30	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/14/12 11:30	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	05/14/12 16:19	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.9		*	%	0.1	0.5	05/17/12 12:21	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:06	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 11:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:39	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:12	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:10	ndj
Synthetic Precip. Leaching Procedure	M1312							05/08/12 22:28	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 14:04	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	4.7			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.0		*	mg/Kg	0.1	0.5	05/08/12 23:19	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.32		*	mg/Kg	0.05	0.3	05/08/12 23:19	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.7	B	*	mg/Kg	0.3	3	05/14/12 14:16	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.114		*	%	0.002	0.01	05/09/12 23:26	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94278-04***
Project ID:	ZN023C	Date Sampled:	*04/26/12 09:25*
Sample ID:	STS-AMD-2012S-W1 18-	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:30	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 16:56	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	65500			mg/Kg	20	100	05/09/12 21:02	aeb
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	05/15/12 19:16	aeb
Copper, total (3050)	M6010B ICP	208		*	mg/Kg	1	5	05/09/12 21:02	aeb
Potassium, total (3050)	M6010B ICP	4070			mg/Kg	30	200	05/09/12 21:02	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.8		*	%	0.1	0.5	05/14/12 12:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	05/14/12 12:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	05/14/12 16:22	bsu
Solids, Percent	CLPSOW390, PART F, D-98	83.3		*	%	0.1	0.5	05/17/12 13:30	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:09	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 12:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:42	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:18	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:16	ndj
Synthetic Precip. Leaching Procedure	M1312							05/08/12 23:25	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 14:20	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.8			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.9		*	mg/Kg	0.1	0.5	05/08/12 23:20	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.15	B	*	mg/Kg	0.05	0.3	05/08/12 23:20	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:18	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.061		*	%	0.002	0.008	05/09/12 23:28	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-W2 6-1

ACZ Sample ID: ***L94278-05***
Date Sampled: *04/26/12 09:40*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:09	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8980			mg/Kg	20	100	05/09/12 21:05	aeb
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	05/15/12 19:19	aeb
Copper, total (3050)	M6010B ICP	133		*	mg/Kg	1	5	05/09/12 21:05	aeb
Potassium, total (3050)	M6010B ICP	3860			mg/Kg	30	200	05/09/12 21:05	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	05/14/12 12:30	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	05/14/12 12:30	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	05/14/12 16:25	bsu
Solids, Percent	CLPSOW390, PART F, D-98	83.1		*	%	0.1	0.5	05/17/12 14:39	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:12	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 12:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:45	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:25	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:21	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 0:22	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 14:36	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.6			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.8		*	mg/Kg	0.1	0.5	05/08/12 23:21	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.19	B	*	mg/Kg	0.05	0.3	05/08/12 23:21	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:19	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.099		*	%	0.002	0.009	05/09/12 23:29	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-06***
Sample ID:	STS-AMD-2012S-W3 6-1	Date Sampled:	*04/26/12 09:55*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:22	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	42700			mg/Kg	20	100	05/09/12 21:15	aeb
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	05/15/12 19:28	aeb
Copper, total (3050)	M6010B ICP	187		*	mg/Kg	1	5	05/09/12 21:15	aeb
Potassium, total (3050)	M6010B ICP	4030			mg/Kg	30	200	05/09/12 21:15	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.2		*	%	0.1	0.5	05/14/12 13:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	05/14/12 13:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	05/14/12 16:27	bsu
Solids, Percent	CLPSOW390, PART F, D-98	81.8		*	%	0.1	0.5	05/17/12 15:47	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:15	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 12:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:48	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:31	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:27	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 2:16	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 14:53	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.0			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.2		*	mg/Kg	0.1	0.5	05/08/12 23:22	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.17	B	*	mg/Kg	0.05	0.3	05/08/12 23:22	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.4	B	*	mg/Kg	0.3	3	05/14/12 14:20	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.117		*	%	0.002	0.01	05/09/12 23:30	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-W4 0-6

ACZ Sample ID: ***L94278-07***
Date Sampled: *04/26/12 08:45*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:34	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.42			mg/L	0.01	0.05	05/15/12 19:34	aeb
Copper, total (3050)	M6010B ICP	3510		*	mg/Kg	1	5	05/09/12 21:18	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/14/12 16:30	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.9		*	%	0.1	0.5	05/17/12 16:56	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:18	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 13:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:51	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:37	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 3:13	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-08***
Sample ID:	STS-AMD-2012S-W5 0-6	Date Sampled:	*04/26/12 08:50*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 17:47	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.21			mg/L	0.01	0.05	05/15/12 19:38	aeb
Copper, total (3050)	M6010B ICP	2970		*	mg/Kg	1	5	05/09/12 21:21	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/14/12 16:33	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.5		*	%	0.1	0.5	05/17/12 18:05	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:22	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 13:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:54	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:44	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 4:10	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-09***
Sample ID:	STS-AMD-2012S-W6 0-6	Date Sampled:	*04/26/12 08:55*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:00	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.12			mg/L	0.01	0.05	05/15/12 19:41	aeb
Copper, total (3050)	M6010B ICP	1470		*	mg/Kg	1	5	05/09/12 21:27	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/14/12 16:36	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.3		*	%	0.1	0.5	05/17/12 19:14	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:25	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 13:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 14:57	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:50	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 5:07	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C
Sample ID:	STS-AMD-2012S-W7 0-6
ACZ Sample ID:	***L94278-10***
Date Sampled:	*04/26/12 09:00*
Date Received:	*04/30/12*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:12	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.17			mg/L	0.01	0.05	05/15/12 19:44	aeb
Copper, total (3050)	M6010B ICP	1730		*	mg/Kg	1	5	05/09/12 21:30	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/14/12 16:41	bsu
Solids, Percent	CLPSOW390, PART F, D-98	97.4		*	%	0.1	0.5	05/17/12 20:23	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:28	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 14:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:00	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 10:56	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 6:04	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-W8 0-6

ACZ Sample ID: ***L94278-11***
Date Sampled: *04/26/12 09:05*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:25	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.31			mg/L	0.01	0.05	05/15/12 19:47	aeb
Copper, total (3050)	M6010B ICP	2610		*	mg/Kg	1	5	05/09/12 21:33	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/14/12 16:44	bsu
Solids, Percent	CLPSOW390, PART F, D-98	98.2		*	%	0.1	0.5	05/17/12 21:31	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:31	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 14:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:03	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:03	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 7:02	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C
Sample ID: STS-AMD-2012S-E1 0-6

ACZ Sample ID: ***L94278-12***
Date Sampled: *04/24/12 16:15*
Date Received: *04/30/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:38	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5770			mg/Kg	20	100	05/09/12 21:36	aeb
Copper (1312)	M6010B ICP	0.14			mg/L	0.01	0.05	05/15/12 19:50	aeb
Copper, total (3050)	M6010B ICP	355		*	mg/Kg	1	5	05/09/12 21:36	aeb
Potassium, total (3050)	M6010B ICP	5910			mg/Kg	30	200	05/09/12 21:36	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	05/14/12 13:30	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	05/14/12 13:30	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	05/14/12 16:47	bsu
Solids, Percent	CLPSOW390, PART F, D-98	87.9		*	%	0.1	0.5	05/17/12 22:40	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:34	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 14:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:06	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:09	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:32	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 7:59	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 15:09	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	7.1			mg/Kg	0.1	0.5	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.5		*	mg/Kg	0.1	0.5	05/08/12 23:26	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.40		*	mg/Kg	0.05	0.3	05/08/12 23:26	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:23	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.099		*	%	0.002	0.01	05/09/12 23:33	pjb

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94278-13***
Project ID:	ZN023C	Date Sampled:	*04/24/12 16:30*
Sample ID:	STS-AMD-2012S-E2 0-6	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 18:50	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6730			mg/Kg	20	100	05/09/12 21:39	aeb
Copper (1312)	M6010B ICP	0.52			mg/L	0.01	0.05	05/15/12 19:53	aeb
Copper, total (3050)	M6010B ICP	716		*	mg/Kg	1	5	05/09/12 21:39	aeb
Potassium, total (3050)	M6010B ICP	5610			mg/Kg	30	200	05/09/12 21:39	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.0		*	%	0.1	0.5	05/14/12 14:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	05/14/12 14:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/14/12 16:50	bsu
Solids, Percent	CLPSOW390, PART F, D-98	88.6		*	%	0.1	0.5	05/17/12 23:49	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:37	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 15:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:09	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:15	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:38	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 8:56	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 15:25	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	44.3			mg/Kg	0.5	3	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	45.9		*	mg/Kg	0.5	3	05/08/12 23:27	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.6		*	mg/Kg	0.3	1	05/08/12 23:27	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.0	B	*	mg/Kg	0.5	5	05/14/12 14:24	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.259		*	%	0.002	0.01	05/09/12 23:34	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-14***
Sample ID:	STS-AMD-2012S-E3 0-6	Date Sampled:	*04/24/12 16:40*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:03	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4740			mg/Kg	20	100	05/09/12 21:42	aeb
Copper (1312)	M6010B ICP	0.70			mg/L	0.01	0.05	05/15/12 19:56	aeb
Copper, total (3050)	M6010B ICP	803		*	mg/Kg	1	5	05/09/12 21:42	aeb
Potassium, total (3050)	M6010B ICP	4560			mg/Kg	30	200	05/09/12 21:42	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	05/14/12 14:30	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/14/12 14:30	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	05/14/12 16:52	bsu
Solids, Percent	CLPSOW390, PART F, D-98	93.1		*	%	0.1	0.5	05/18/12 0:58	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:40	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 15:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:12	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:22	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:43	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 9:53	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 15:41	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	24.8			mg/Kg	0.5	3	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	25.9		*	mg/Kg	0.5	3	05/08/12 23:28	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.1		*	mg/Kg	0.3	1	05/08/12 23:28	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	1.5	B	*	mg/Kg	0.5	5	05/14/12 14:25	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.158		*	%	0.002	0.01	05/09/12 23:35	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94278-15***
Project ID:	ZN023C	Date Sampled:	*04/24/12 16:20*
Sample ID:	STS-AMD-2012S-E1 12-	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:16	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	28300			mg/Kg	20	100	05/09/12 21:51	aeb
Copper (1312)	M6010B ICP	0.03	B		mg/L	0.01	0.05	05/15/12 20:05	aeb
Copper, total (3050)	M6010B ICP	78		*	mg/Kg	1	5	05/09/12 21:51	aeb
Potassium, total (3050)	M6010B ICP	5170			mg/Kg	30	200	05/09/12 21:51	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.9		*	%	0.1	0.5	05/14/12 15:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	05/14/12 15:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	05/14/12 16:55	bsu
Solids, Percent	CLPSOW390, PART F, D-98	82.5		*	%	0.1	0.5	05/18/12 2:07	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:44	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 15:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:15	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:28	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:49	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 10:50	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 15:57	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	53.8			mg/Kg	0.5	3	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	54.0		*	mg/Kg	0.5	3	05/08/12 23:35	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.22	B	*	mg/Kg	0.05	0.3	05/08/12 23:29	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:27	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.085		*	%	0.002	0.008	05/09/12 23:36	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L94278-16***
Project ID:	ZN023C	Date Sampled:	*04/24/12 16:35*
Sample ID:	STS-AMD-2012S-E2 18-	Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:31	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:29	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	11600			mg/Kg	20	100	05/09/12 21:54	aeb
Copper (1312)	M6010B ICP	0.13			mg/L	0.01	0.05	05/15/12 20:08	aeb
Copper, total (3050)	M6010B ICP	363		*	mg/Kg	1	5	05/09/12 21:54	aeb
Potassium, total (3050)	M6010B ICP	5740			mg/Kg	30	200	05/09/12 21:54	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.0		*	%	0.1	0.5	05/14/12 15:30	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	05/14/12 15:30	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	05/14/12 16:58	bsu
Solids, Percent	CLPSOW390, PART F, D-98	77.3		*	%	0.1	0.5	05/18/12 3:16	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:47	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 16:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:18	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:34	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:54	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 12:44	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 16:13	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	43.2			mg/Kg	0.5	3	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	43.5		*	mg/Kg	0.5	3	05/08/12 23:36	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.30		*	mg/Kg	0.05	0.3	05/08/12 23:30	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	05/14/12 14:28	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.137		*	%	0.002	0.01	05/09/12 23:38	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-17***
Sample ID:	STS-AMD-2012S-E3 18-	Date Sampled:	*04/24/12 16:45*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							05/08/12 9:32	tcd
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:41	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8770			mg/Kg	20	100	05/09/12 21:58	aeb
Copper (1312)	M6010B ICP	0.37			mg/L	0.01	0.05	05/15/12 20:11	aeb
Copper, total (3050)	M6010B ICP	574		*	mg/Kg	1	5	05/09/12 21:58	aeb
Potassium, total (3050)	M6010B ICP	3880			mg/Kg	30	200	05/09/12 21:58	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.2		*	%	0.1	0.5	05/14/12 16:00	ndj
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.8		*	%	0.1	0.5	05/14/12 16:00	ndj
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	05/14/12 17:01	bsu
Solids, Percent	CLPSOW390, PART F, D-98	84.2		*	%	0.1	0.5	05/18/12 4:24	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:50	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 16:20	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:21	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:41	nrc
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							05/10/12 15:59	ndj
Synthetic Precip. Leaching Procedure	M1312							05/09/12 13:41	bsu
Water Extraction	ASA No. 9 10-2.3.2							05/07/12 16:29	bsu

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	48.8			mg/Kg	0.5	3	05/22/12 0:00	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	49.9		*	mg/Kg	0.5	3	05/08/12 23:37	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.06		*	mg/Kg	0.05	0.3	05/08/12 23:32	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.6	B	*	mg/Kg	0.3	3	05/14/12 14:29	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.275		*	%	0.002	0.009	05/09/12 23:39	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-18***
Sample ID:	STS-AMD-2012S-E4 0-6	Date Sampled:	*04/24/12 18:10*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 19:54	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.52			mg/L	0.01	0.05	05/15/12 20:15	aeb
Copper, total (3050)	M6010B ICP	1610		*	mg/Kg	1	5	05/09/12 22:01	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	05/14/12 17:04	bsu
Solids, Percent	CLPSOW390, PART F, D-98	93.9		*	%	0.1	0.5	05/18/12 5:33	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:53	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 16:40	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:24	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:47	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 14:38	bsu

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-19***
Sample ID:	STS-AMD-2012S-E5 0-6	Date Sampled:	*04/24/12 18:15*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 20:07	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.51			mg/L	0.01	0.05	05/15/12 20:18	aeb
Copper, total (3050)	M6010B ICP	645		*	mg/Kg	1	5	05/09/12 22:04	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	05/14/12 17:06	bsu
Solids, Percent	CLPSOW390, PART F, D-98	92.1		*	%	0.1	0.5	05/18/12 6:42	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:56	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 17:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:27	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 11:53	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 15:35	bsu

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN023C	ACZ Sample ID:	***L94278-20***
Sample ID:	STS-AMD-2012S-E6 0-6	Date Sampled:	*04/24/12 18:20*
		Date Received:	*04/30/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							05/14/12 20:19	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.67			mg/L	0.01	0.05	05/15/12 20:21	aeb
Copper, total (3050)	M6010B ICP	838		*	mg/Kg	1	5	05/09/12 22:07	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	05/14/12 17:12	bsu
Solids, Percent	CLPSOW390, PART F, D-98	89.9		*	%	0.1	0.5	05/18/12 7:51	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							05/04/12 14:59	ndj
Digestion - Hot Plate	M3050B ICP							05/08/12 9:00	nrc
Saturated Paste Extraction	USDA No. 60 (2)							05/10/12 15:30	bsu
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							05/07/12 12:00	nrc
Synthetic Precip. Leaching Procedure	M1312							05/09/12 16:33	bsu

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94278***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322378													
WG322378ICV	ICV	05/09/12 20:22	II120430-5	100		98.66	mg/L	98.7	90	110			
WG322378ICB	ICB	05/09/12 20:25				U	mg/L		-0.6	0.6			
WG322378PQV	PQV	05/09/12 20:28	II120430-2	1		1.05	mg/L	105	70	130			
WG322378ICSAB	ICSAB	05/09/12 20:32	II120217-3	250		243.2	mg/L	97.3	80	120			
WG322270PBS	PBS	05/09/12 20:38				U	mg/Kg		-60	60			
WG322270LCSS	LCSS	05/09/12 20:41	PCN39540	6140		6094	mg/Kg		5110	7180			
WG322270LCSSD	LCSSD	05/09/12 20:44	PCN39540	6140		6001	mg/Kg		5110	7180	1.5	20	
L94278-01MS	MS	05/09/12 20:50	II120507-3	6937.3974	8750	15096	mg/Kg	91.5	75	125			
L94278-01MSD	MSD	05/09/12 20:53	II120507-3	6937.3974	8750	15779	mg/Kg	101.3	75	125	4.42	20	
WG322378CCV1	CCV	05/09/12 21:08	II120430-6	50		49.72	mg/L	99.4	90	110			
WG322378CCB1	CCB	05/09/12 21:11				U	mg/L		-0.6	0.6			
L94278-08SDL	SDL	05/09/12 21:24			10800	11795	mg/Kg				9.2	10	
WG322378CCV2	CCV	05/09/12 21:45	II120430-6	50		48.7	mg/L	97.4	90	110			
WG322378CCB2	CCB	05/09/12 21:48				U	mg/L		-0.6	0.6			
WG322378CCV3	CCV	05/09/12 22:10	II120430-6	50		51.82	mg/L	103.6	90	110			
WG322378CCB3	CCB	05/09/12 22:13				U	mg/L		-0.6	0.6			

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322560													
WG322560PBS	PBS	05/14/12 9:00				U	%		-0.3	0.3			
WG322560LCSS	LCSS	05/14/12 9:30	PCN38836	4.19		4	%		80	120			
L94278-01DUP	DUP	05/14/12 10:30			1.4	1.4	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322560													
WG322560PBS	PBS	05/14/12 9:00				U	%		-0.3	0.3			
L94278-01DUP	DUP	05/14/12 10:30			1.2	1.2	%				0	20	

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94278***

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322643													
WG322643ICV	ICV	05/15/12 18:36	II120430-5	2		1.974	mg/L	98.7	90	110			
WG322643ICB	ICB	05/15/12 18:39				U	mg/L		-0.03	0.03			
WG322643PQV	PQV	05/15/12 18:42	II120430-2	.05		.049	mg/L	98	70	130			
WG322643ICSAB	ICSAB	05/15/12 18:45	II120217-3	.255		.248	mg/L	97.3	80	120			
WG322278PBS	PBS	05/15/12 18:51				U	mg/L		-0.03	0.03			
WG322278LFB	LFB	05/15/12 18:54	II120507-3	.5		.492	mg/L	98.4	85	115			
L94278-01DUP	DUP	05/15/12 19:01			.1	.098	mg/L				2	20	
L94278-02MS	MS	05/15/12 19:07	II120507-3	.5	.05	.547	mg/L	99.4	75	125			
L94278-02MSD	MSD	05/15/12 19:10	II120507-3	.5	.05	.556	mg/L	101.2	75	125	1.63	20	
WG322643CCV1	CCV	05/15/12 19:22	II120430-6	1		.994	mg/L	99.4	90	110			
WG322643CCB1	CCB	05/15/12 19:25				U	mg/L		-0.03	0.03			
L94278-06SDL	SDL	05/15/12 19:31			U	U	mg/L					10	
WG322643CCV2	CCV	05/15/12 19:59	II120430-6	1		.992	mg/L	99.2	90	110			
WG322643CCB2	CCB	05/15/12 20:02				U	mg/L		-0.03	0.03			
WG322643CCV3	CCV	05/15/12 20:24	II120430-6	1		.989	mg/L	98.9	90	110			
WG322643CCB3	CCB	05/15/12 20:27				U	mg/L		-0.03	0.03			

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322378													
WG322378ICV	ICV	05/09/12 20:22	II120430-5	2		1.986	mg/L	99.3	90	110			
WG322378ICB	ICB	05/09/12 20:25				U	mg/L		-0.03	0.03			
WG322378PQV	PQV	05/09/12 20:28	II120430-2	.05		.056	mg/L	112	70	130			
WG322378ICSAB	ICSAB	05/09/12 20:32	II120217-3	.255		.252	mg/L	98.8	80	120			
WG322270PBS	PBS	05/09/12 20:38				U	mg/Kg		-3	3			
WG322270LCSS	LCSS	05/09/12 20:41	PCN39540	79.6		76.6	mg/Kg		66.7	92.4			
WG322270LCSSD	LCSSD	05/09/12 20:44	PCN39540	79.6		76.1	mg/Kg		66.7	92.4	0.7	20	
L94278-01MS	MS	05/09/12 20:50	II120507-3	51	1830	1872.7	mg/Kg	83.7	75	125			
L94278-01MSD	MSD	05/09/12 20:53	II120507-3	51	1830	1972.7	mg/Kg	279.8	75	125	5.2	20	M3
WG322378CCV1	CCV	05/09/12 21:08	II120430-6	1		.983	mg/L	98.3	90	110			
WG322378CCB1	CCB	05/09/12 21:11				U	mg/L		-0.03	0.03			
L94278-08SDL	SDL	05/09/12 21:24			2970	3191	mg/Kg				7.4	10	
WG322378CCV2	CCV	05/09/12 21:45	II120430-6	1		.952	mg/L	95.2	90	110			
WG322378CCB2	CCB	05/09/12 21:48				U	mg/L		-0.03	0.03			
WG322378CCV3	CCV	05/09/12 22:10	II120430-6	1		.996	mg/L	99.6	90	110			
WG322378CCB3	CCB	05/09/12 22:13				U	mg/L		-0.03	0.03			

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322336													
WG322336ICV	ICV	05/08/12 22:27	WI120405-3	2.416		2.474	mg/L	102.4	90	110			
WG322336ICB	ICB	05/08/12 22:28				U	mg/L		-0.06	0.06			
WG322342													
WG322342CCV1	CCV	05/08/12 23:09	WI120504-9	2		1.97	mg/L	98.5	90	110			
WG322342CCB1	CCB	05/08/12 23:10				U	mg/L		-0.06	0.06			
WG322342LFB	LFB	05/08/12 23:11	WI120211-3	2		1.981	mg/Kg	99.1	90	110			
WG322237PBS	PBS	05/08/12 23:13				U	mg/Kg		-0.3	0.3			
L94278-01AS	AS	05/08/12 23:15	WI120211-3	10	2.1	12.1	mg/Kg	100	90	110			
L94278-02DUP	DUP	05/08/12 23:17			1.4	1.21	mg/Kg				14.6	20	
WG322342CCV2	CCV	05/08/12 23:23	WI120504-9	2		1.962	mg/L	98.1	90	110			
WG322342CCB2	CCB	05/08/12 23:25				U	mg/L		-0.06	0.06			
WG322342CCV3	CCV	05/08/12 23:40	WI120504-9	2		1.967	mg/L	98.4	90	110			
WG322342CCB3	CCB	05/08/12 23:41				U	mg/L		-0.06	0.06			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322336													
WG322336ICV	ICV	05/08/12 22:27	WI120405-3	.609		.619	mg/L	101.6	90	110			
WG322336ICB	ICB	05/08/12 22:28				U	mg/L		-0.03	0.03			
WG322342													
WG322342CCV1	CCV	05/08/12 23:09	WI120504-9	1		.983	mg/L	98.3	90	110			
WG322342CCB1	CCB	05/08/12 23:10				U	mg/L		-0.03	0.03			
WG322342LFB	LFB	05/08/12 23:11	WI120211-3	1		.993	mg/Kg	99.3	90	110			
WG322237PBS	PBS	05/08/12 23:13				U	mg/Kg		-0.15	0.15			
L94278-01AS	AS	05/08/12 23:15	WI120211-3	5	.18	5.423	mg/Kg	104.9	90	110			
L94278-02DUP	DUP	05/08/12 23:17			.19	.232	mg/Kg				19.9	20	RA
WG322342CCV2	CCV	05/08/12 23:23	WI120504-9	1		.984	mg/L	98.4	90	110			
WG322342CCB2	CCB	05/08/12 23:25				U	mg/L		-0.03	0.03			
WG322342CCV3	CCV	05/08/12 23:40	WI120504-9	1		.984	mg/L	98.4	90	110			
WG322342CCB3	CCB	05/08/12 23:41				U	mg/L		-0.03	0.03			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94278***

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322573													
WG322573ICV	ICV	05/14/12 12:56	WI111117-1	1.002		.989	mg/L	98.7	90	110			
WG322573ICB	ICB	05/14/12 12:57				U	mg/L		-0.15	0.15			
WG322586													
WG322586CCV1	CCV	05/14/12 14:07	WI111101-1	2		1.918	mg/L	95.9	90	110			
WG322586CCB1	CCB	05/14/12 14:08				U	mg/L		-0.15	0.15			
WG322237PBS	PBS	05/14/12 14:11				U	mg/Kg		-0.9	0.9			
L94278-01MS	MS	05/14/12 14:13	NH3-WE5X	25	U	4.88	mg/Kg	97.6	75	125			
L94278-02DUP	DUP	05/14/12 14:15			U	U	mg/Kg				0	20	RA
WG322586CCV2	CCV	05/14/12 14:21	WI111101-1	2		1.906	mg/L	95.3	90	110			
WG322586CCB2	CCB	05/14/12 14:22				U	mg/L		-0.15	0.15			
WG322586CCV3	CCV	05/14/12 14:32	WI111101-1	2		1.893	mg/L	94.7	90	110			
WG322586CCB3	CCB	05/14/12 14:33				U	mg/L		-0.15	0.15			
WG322586CCV4	CCV	05/14/12 14:38	WI111101-1	2		1.951	mg/L	97.6	90	110			
WG322586CCB4	CCB	05/14/12 14:39				U	mg/L		-0.15	0.15			
WG322586LFB	LFB	05/14/12 14:40	WI111101-3	1		.928	mg/L	92.8	90	110			
WG322586CCV5	CCV	05/14/12 14:43	WI111101-1	2		1.988	mg/L	99.4	90	110			
WG322586CCB5	CCB	05/14/12 14:45				U	mg/L		-0.15	0.15			

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322412													
WG322412ICV	ICV	05/09/12 23:17	WI120424-1	4		3.81	mg/L	95.3	90	110			
WG322412ICB	ICB	05/09/12 23:18				U	mg/L		-0.3	0.3			
WG322306PBS1	PBS	05/09/12 23:20				U	%		-0.06	0.06			
WG322306LFB1	LFB	05/09/12 23:21	WI120215-4	2.5		2.41	%	96.4	85	115			
L94278-01MS	MS	05/09/12 23:23	WI120215-4	.0475	.083	.1627	%	154.9	75	125			M1
WG322412CCV1	CCV	05/09/12 23:31	WI120412-1	5		4.85	mg/L	97	90	110			
WG322412CCB1	CCB	05/09/12 23:32				U	mg/Kg		-0.3	0.3			
WG322412CCV2	CCV	05/09/12 23:44	WI120412-1	5		4.75	mg/L	95	90	110			
WG322412CCB2	CCB	05/09/12 23:46				U	mg/Kg		-0.3	0.3			
WG322306PBS2	PBS	05/09/12 23:51				U	%		-0.006	0.006			
WG322306LFB2	LFB	05/09/12 23:52	WI120215-4	2.5		2.4	%	96	85	115			
L94280-16MS	MS	05/09/12 23:55	WI120215-4	.04	.133	.1779	%	112.3	75	125			
L94280-17DUP	DUP	05/09/12 23:57			.1	.0887	%				12	20	
WG322412CCV3	CCV	05/09/12 23:58	WI120412-1	5		4.62	mg/L	92.4	90	110			
WG322412CCB3	CCB	05/09/12 23:59				U	mg/Kg		-0.3	0.3			
L94278-02DUP	DUP	05/10/12 0:10			.065	.1088	%				50.4	20	RD
WG322412CCV4	CCV	05/10/12 0:14	WI120412-1	5		4.63	mg/L	92.6	90	110			
WG322412CCB4	CCB	05/10/12 0:15				U	mg/Kg		-0.3	0.3			

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322479													
WG322479ICV	ICV	05/14/12 16:08	PCN38642	4		3.98	units	99.5	97	103			
L94278-01DUP	DUP	05/14/12 16:13			7.7	7.75	units				0.6	20	
WG322479CCV1	CCV	05/14/12 16:38	PCN38642	4		4.09	units	102.3	97	103			
WG322479CCV2	CCV	05/14/12 17:09	PCN38642	4		4.01	units	100.3	97	103			
WG322479CCV3	CCV	05/14/12 17:15	PCN38642	4		4.01	units	100.3	97	103			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN023C

ACZ Project ID: ***L94278***

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322378													
WG322378ICV	ICV	05/09/12 20:22	II120430-5	20		19.94	mg/L	99.7	90	110			
WG322378ICB	ICB	05/09/12 20:25				U	mg/L		-0.9	0.9			
WG322378PQV	PQV	05/09/12 20:28	II120430-2	1.5		1.56	mg/L	104	70	130			
WG322378ICSAB	ICSAB	05/09/12 20:32	II120217-3	25		24.9	mg/L	99.6	80	120			
WG322270PBS	PBS	05/09/12 20:38				U	mg/Kg		-90	90			
WG322270LCSS	LCSS	05/09/12 20:41	PCN39540	2490		2646	mg/Kg		1740	3230			
WG322270LCSSD	LCSSD	05/09/12 20:44	PCN39540	2490		2614	mg/Kg		1740	3230	1.2	20	
L94278-01MS	MS	05/09/12 20:50	II120507-3	10191.75534	3080	13658	mg/Kg	103.8	75	125			
L94278-01MSD	MSD	05/09/12 20:53	II120507-3	10191.75534	3080	13484	mg/Kg	102.1	75	125	1.28	20	
WG322378CCV1	CCV	05/09/12 21:08	II120430-6	10		9.72	mg/L	97.2	90	110			
WG322378CCB1	CCB	05/09/12 21:11				U	mg/L		-0.9	0.9			
L94278-08SDL	SDL	05/09/12 21:24			2670	2850	mg/Kg				6.7	10	
WG322378CCV2	CCV	05/09/12 21:45	II120430-6	10		9.44	mg/L	94.4	90	110			
WG322378CCB2	CCB	05/09/12 21:48				U	mg/L		-0.9	0.9			
WG322378CCV3	CCV	05/09/12 22:10	II120430-6	10		9.9	mg/L	99	90	110			
WG322378CCB3	CCB	05/09/12 22:13				U	mg/L		-0.9	0.9			

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG322811													
WG322811PBS	PBS	05/17/12 8:55				U	%		99.9	100.1			
L94278-20DUP	DUP	05/18/12 9:00			89.9	90.26	%				0.4	20	

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L94278***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-01	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L94278-02	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-03	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L94278-04	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-05	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L94278-06	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L94278-07	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94278-08	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-09	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94278-10	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94278-11	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94278-12	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-13	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L94278-14	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-15	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322412	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L94278-16	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L94278-17	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG322560	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG322342	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG322586	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L94278-18	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94278-19	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L94278-20	WG322378	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN023C

ACZ Project ID: L94278
Date Received: 04/30/2012 09:35
Received By: ksj
Date Printed: 5/1/2012

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
Na15246		10.7	15
Na15247		9.5	16
Na15250		10	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company

ZN023C

ACZ Project ID: L94278

Date Received: 04/30/2012 09:35

Received By: ksj

Date Printed: 5/1/2012

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L94278-01	STS-AMD-2012S-W1 0-6									X		☐
L94278-02	STS-AMD-2012S-W2 0-6									X		☐
L94278-03	STS-AMD-2012S-W3 0-6									X		☐
L94278-04	STS-AMD-2012S-W1 18-									X		☐
L94278-05	STS-AMD-2012S-W2 6-1									X		☐
L94278-06	STS-AMD-2012S-W3 6-1									X		☐
L94278-07	STS-AMD-2012S-W4 0-6									X		☐
L94278-08	STS-AMD-2012S-W5 0-6									X		☐
L94278-09	STS-AMD-2012S-W6 0-6									X		☐
L94278-10	STS-AMD-2012S-W7 0-6									X		☐
L94278-11	STS-AMD-2012S-W8 0-6									X		☐
L94278-12	STS-AMD-2012S-E1 0-6									X		☐
L94278-13	STS-AMD-2012S-E2 0-6									X		☐
L94278-14	STS-AMD-2012S-E3 0-6									X		☐
L94278-15	STS-AMD-2012S-E1 12-									X		☐
L94278-16	STS-AMD-2012S-E2 18-									X		☐
L94278-17	STS-AMD-2012S-E3 18-									X		☐
L94278-18	STS-AMD-2012S-E4 0-6									X		☐
L94278-19	STS-AMD-2012S-E5 0-6									X		☐
L94278-20	STS-AMD-2012S-E6 0-6									X		☐

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc. L94278

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)
STS-AMD-2012S-W1 0-6	4.26.12 09:15	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2012S-W2 0-6	4.26.12 09:35	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2012S-W3 0-6	4.26.12 09:45	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2012S-W1 18-24	4.26.12 09:25	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2012S-W2 6-12	4.26.12 09:40	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2012S-W3 6-12	4.26.12 09:55	SO	1	✗	✗	✗	✗	✗	✗	✗
STS-AMD-2012S-W4 0-6	4.26.12 08:45	SO	1	✗	✗	✗				
STS-AMD-2012S-W5 0-6	4.26.12 08:50	SO	1	✗	✗	✗				
STS-AMD-2012S-W6 0-6	4.26.12 08:55	SO	1	✗	✗	✗				
STS-AMD-2012S-W7 0-6	4.26.12 09:00	SO	1	✗	✗	✗				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

EMARKS

lease send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a ry weight basis.

lethods:

H - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total rganic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY	DATE:TIME
	4.26.12 1330	AVK 4/30/12	0900

L94278 Chain of Custoc

ACZ Laboratories, Inc. L94278

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Matt Bauer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012S-W8 0-6	4.26.12 09:05	SO	1	x	x	x					
STS-AMD-2012S-E1 0-6	4.24.12 16:15	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-E2 0-6	4.24.12 16:30	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-E3 0-6	4.24.12 16:40	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-E1@depth 12-18	WPC 4-3-12 4.24.12 16:20	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-E2@depth 18-24	WPC 4-3-12 4.24.12 16:35	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-E3@depth 18-24	WPC 4-3-12 4.24.12 16:45	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012S-E4 0-6	4.24.12 18:10	SO	1	x	x	x					
STS-AMD-2012S-E5 0-6	4.24.12 18:15	SO	1	x	x	x					
STS-AMD-2012S-E6 0-6	4.24.12 18:20	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM 4500 (organic), Nitrate/Nitrite 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4.26.12 1330	4/30/12	0900

2

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 15, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97384

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97384. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97384. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 15, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-FID37

ACZ Sample ID: ***L97384-01***
Date Sampled: *10/12/12 08:15*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	765			mg/Kg	1	5	11/09/12 10:12	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	0.0			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	0			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)		U	*	%	0.1	0.5	11/12/12 18:54	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.5			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	95.8		*	%	0.1	0.5	10/30/12 19:25	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.01	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Pyritic Sulfide		0.01	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Sulfate		0.01	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Total		0.02	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Total Sulfur minus Sulfate		0.01	B	*	%	0.01	0.1	11/03/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:36	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/02/12 9:33	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 9:57	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/02/12 9:33	cdb

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-02***
Sample ID:	STS-PH-2012-ERA3	Date Sampled:	*10/10/12 15:20*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	624			mg/Kg	1	5	11/09/12 10:15	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	6			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	7			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1.3		*	%	0.1	0.5	11/14/12 13:43	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.4			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	93.1		*	%	0.1	0.5	10/30/12 20:12	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.08	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur HNO3 Residue		0.03	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Organic Residual		0.03	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Pyritic Sulfide		0.05	B	*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Sulfate		0.11		*	%	0.01	0.1	11/03/12 0:00	mss2
Sulfur Total		0.19		*	%	0.01	0.1	11/03/12 0:00	mss2
Total Sulfur minus Sulfate		0.08	B	*	%	0.01	0.1	11/03/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:40	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/02/12 16:26	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 10:16	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/02/12 15:34	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-FID101

ACZ Sample ID: ***L97384-03***
Date Sampled: *10/12/12 09:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	290			mg/Kg	1	5	11/09/12 10:18	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	5	B		t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	0.0			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-5			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)		U	*	%	0.1	0.5	11/12/12 22:12	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.2			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	96.4		*	%	0.1	0.5	10/30/12 21:00	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.06	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Pyritic Sulfide		0.06	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Sulfate		0.09	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Total		0.15		*	%	0.01	0.1	11/04/12 0:00	mss2
Total Sulfur minus Sulfate		0.06	B	*	%	0.01	0.1	11/04/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:44	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/02/12 23:19	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 10:35	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/02/12 21:36	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-PH-2012-FID102
ACZ Sample ID:	***L97384-04***
Date Sampled:	*10/12/12 11:15*
Date Received:	*10/16/12*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	230			mg/Kg	1	5	11/09/12 10:27	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	15			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	28			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	11/15/12 14:57	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	2.8		*	%	0.1	0.5	11/12/12 23:51	nrc
pH, Corrosivity	M9045D/M9040C								
pH		3.7			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	10/30/12 21:47	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.18		*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur HNO3 Residue		0.02	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Organic Residual		0.02	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Pyritic Sulfide		0.16		*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Sulfate		0.29		*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Total		0.47		*	%	0.01	0.1	11/04/12 0:00	mss2
Total Sulfur minus Sulfate		0.18		*	%	0.01	0.1	11/04/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:48	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/03/12 6:13	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 11:32	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/03/12 3:38	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-05***
Sample ID:	STS-PH-2012-ERA4	Date Sampled:	*10/10/12 17:48*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	514			mg/Kg	1	5	11/09/12 10:30	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	2	B		t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	8			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	6			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.8		*	%	0.1	0.5	11/13/12 1:30	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.8			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	97.6		*	%	0.1	0.5	10/30/12 22:34	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.03	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Pyritic Sulfide		0.03	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Sulfate		0.02	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Total		0.05	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Total Sulfur minus Sulfate		0.03	B	*	%	0.01	0.1	11/04/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:52	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/03/12 13:06	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 11:51	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/03/12 9:39	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-ERA10

ACZ Sample ID: ***L97384-06***
Date Sampled: *10/11/12 14:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	299			mg/Kg	1	5	11/09/12 10:39	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	0.0			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	0			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)		U	*	%	0.1	0.5	11/13/12 3:09	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.7			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	94.9		*	%	0.1	0.5	10/30/12 23:21	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.01	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Pyritic Sulfide		0.01	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Sulfate			U	*	%	0.01	0.1	11/04/12 0:00	mss2
Sulfur Total		0.01	B	*	%	0.01	0.1	11/04/12 0:00	mss2
Total Sulfur minus Sulfate		0.01	B	*	%	0.01	0.1	11/04/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:56	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/03/12 19:59	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 12:10	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/03/12 15:41	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97384-07***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 16:00*
Sample ID:	STS-PH-2012-FID105	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	799			mg/Kg	1	5	11/09/12 10:42	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	3	B		t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	5			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	2			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.5		*	%	0.1	0.5	11/13/12 4:48	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.6			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	94.1		*	%	0.1	0.5	10/31/12 0:08	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.05	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur HNO3 Residue		0.01	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Organic Residual		0.01	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Pyritic Sulfide		0.04	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Sulfate		0.05	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Total		0.10		*	%	0.01	0.1	11/05/12 0:00	mss2
Total Sulfur minus Sulfate		0.05	B	*	%	0.01	0.1	11/05/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 16:00	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/04/12 2:53	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 12:29	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/03/12 21:43	cdb

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97384-08***
Project ID:	ZN000001M5	Date Sampled:	*10/11/12 15:50*
Sample ID:	STS-PH-2012-FID106	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	408			mg/Kg	1	5	11/09/12 10:45	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1.3		*	%	0.1	0.5	11/13/12 6:27	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.7			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	96.4		*	%	0.1	0.5	10/31/12 0:55	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.02	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Pyritic Sulfide		0.02	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Sulfate		0.01	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Total		0.03	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Total Sulfur minus Sulfate		0.02	B	*	%	0.01	0.1	11/05/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:30	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/04/12 9:46	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 12:49	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/04/12 3:44	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-09***
Sample ID:	STS-PH-2012-REFPLOT1	Date Sampled:	*10/08/12 18:20*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	1120			mg/Kg	1	5	11/09/12 10:48	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	61			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	61			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	6.1		*	%	0.1	0.5	11/14/12 16:05	nrc
pH, Corrosivity	M9045D/M9040C								
pH		7.6			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	96.6		*	%	0.1	0.5	10/31/12 1:42	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.03	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Pyritic Sulfide		0.03	B	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Sulfate			U	*	%	0.01	0.1	11/05/12 0:00	mss2
Sulfur Total			U	*	%	0.01	0.1	11/05/12 0:00	mss2
Total Sulfur minus Sulfate			U	*	%	0.01	0.1	11/05/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:33	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/04/12 16:39	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 13:08	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/04/12 9:46	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-10***
Sample ID:	STS-PH-2012-REFPLOT2	Date Sampled:	*10/09/12 10:55*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	1170			mg/Kg	1	5	11/09/12 10:51	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	6			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	6			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.6		*	%	0.1	0.5	11/13/12 9:45	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.8			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	10/31/12 2:30	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Pyritic Sulfide			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Sulfate			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Total			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Total Sulfur minus Sulfate			U	*	%	0.01	0.1	11/06/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:36	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/04/12 23:33	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 13:27	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/04/12 15:48	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-11***
Sample ID:	DUP7	Date Sampled:	*10/10/12 00:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/12/12 17:19	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.05	B	*	mg/L	0.01	0.05	11/13/12 12:48	jjc
Copper, total (3050)	M6010B ICP	609			mg/Kg	1	5	11/09/12 10:54	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.9		*	units	0.1	0.1	11/10/12 11:25	cdb
Solids, Percent	CLPSOW390, PART F, D-98	91.7		*	%	0.1	0.5	10/31/12 3:17	cdb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:40	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 13:46	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/10/12 8:00	cdb
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/04/12 21:49	cdb
Synthetic Precip. Leaching Procedure	M1312							11/10/12 3:32	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97384-12***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 00:00*
Sample ID:	DUP8	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/12/12 18:56	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/13/12 12:58	jjc
Copper, total (3050)	M6010B ICP	949			mg/Kg	1	5	11/09/12 10:57	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.6		*	units	0.1	0.1	11/10/12 12:17	cdb
Solids, Percent	CLPSOW390, PART F, D-98	93.8		*	%	0.1	0.5	10/31/12 4:04	cdb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:43	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 14:05	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/10/12 11:00	cdb
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/05/12 3:51	cdb
Synthetic Precip. Leaching Procedure	M1312							11/10/12 7:43	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-13***
Sample ID:	STS-PH-2012-REFPLOT3	Date Sampled:	*10/09/12 17:55*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	2250			mg/Kg	1	5	11/09/12 11:03	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	2	B		t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	3			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	1			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.3	B	*	%	0.1	0.5	11/13/12 11:24	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.1			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	92.4		*	%	0.1	0.5	10/31/12 4:51	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.03	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Pyritic Sulfide		0.03	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Sulfate		0.03	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Total		0.06	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Total Sulfur minus Sulfate		0.03	B	*	%	0.01	0.1	11/06/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:46	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/05/12 6:26	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 14:24	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/05/12 9:53	cdb

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-14***
Sample ID:	STS-PH-2012-REFPLOT4	Date Sampled:	*10/10/12 13:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	1210			mg/Kg	1	5	11/09/12 11:06	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	3	B		t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	8			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	5			t CaCO3/Kt	1	5	11/15/12 14:58	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.8		*	%	0.1	0.5	11/13/12 13:03	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.8			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	94.6		*	%	0.1	0.5	10/31/12 5:38	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.06	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Pyritic Sulfide		0.06	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Sulfate		0.04	B	*	%	0.01	0.1	11/06/12 0:00	mss2
Sulfur Total		0.10		*	%	0.01	0.1	11/06/12 0:00	mss2
Total Sulfur minus Sulfate		0.06	B	*	%	0.01	0.1	11/06/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:50	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/05/12 13:19	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 14:43	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/05/12 15:54	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-15***
Sample ID:	STS-PH-2012-ERA13	Date Sampled:	*10/11/12 11:55*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	292			mg/Kg	1	5	11/09/12 11:16	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	19			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	19			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1.9		*	%	0.1	0.5	11/13/12 14:42	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.6			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	95.9		*	%	0.1	0.5	10/31/12 6:25	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.02	B	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Pyritic Sulfide		0.02	B	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Sulfate			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Total			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Total Sulfur minus Sulfate			U	*	%	0.01	0.1	11/07/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:53	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/05/12 20:13	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 15:02	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/05/12 21:56	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97384-16***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 00:00*
Sample ID:	DUP9	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	953			mg/Kg	1	5	11/09/12 11:19	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	15			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	15			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1.5		*	%	0.1	0.5	11/14/12 18:27	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.4			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	95.8		*	%	0.1	0.5	10/31/12 7:13	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.05	B	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Pyritic Sulfide		0.05	B	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Sulfate			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Total			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Total Sulfur minus Sulfate			U	*	%	0.01	0.1	11/07/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 15:56	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/06/12 3:06	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 15:21	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 3:58	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97384-17***
Sample ID:	DUP10	Date Sampled:	*10/11/12 00:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	257			mg/Kg	1	5	11/09/12 11:22	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	11/15/12 14:59	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1.3		*	%	0.1	0.5	11/13/12 16:21	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.7			units	0.1	0.1	11/10/12 0:00	cdb
pH measured at		20.5			C	0.1	0.1	11/10/12 0:00	cdb
Solids, Percent	CLPSOW390, PART F, D-98	94.6		*	%	0.1	0.5	10/31/12 8:00	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.01	B	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Organic Residual			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Pyritic Sulfide		0.01	B	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Sulfate			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Sulfur Total			U	*	%	0.01	0.1	11/07/12 0:00	mss2
Total Sulfur minus Sulfate			U	*	%	0.01	0.1	11/07/12 0:00	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							10/26/12 16:00	cdb
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/06/12 9:59	cdb
Digestion - Hot Plate	M3050B ICP							11/08/12 15:40	cra
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 9:59	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333999													
WG333999ICV	ICV	11/13/12 12:27	II120914-3	2		1.947	mg/L	97.4	90	110			
WG333999ICB	ICB	11/13/12 12:30				U	mg/L		-0.03	0.03			
WG333869PBS	PBS	11/13/12 12:42				U	mg/L		-0.03	0.03			
WG333869LFB	LFB	11/13/12 12:45	II121029-3	.5		.509	mg/L	101.8	85	115			
L97384-11DUP	DUP	11/13/12 12:55			.05	.048	mg/L				4.1	20	RA
L97384-12MS	MS	11/13/12 13:01	II121029-3	.5	.03	.541	mg/L	102.2	75	125			
L97384-12MSD	MSD	11/13/12 13:04	II121029-3	.5	.03	.544	mg/L	102.8	75	125	0.55	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333809													
WG333809ICV	ICV	11/09/12 9:47	II120914-3	2		1.927	mg/L	96.4	90	110			
WG333809ICB	ICB	11/09/12 9:50				U	mg/L		-0.03	0.03			
WG333717PBS	PBS	11/09/12 10:02				U	mg/Kg		-3	3			
WG333717LCSS	LCSS	11/09/12 10:06	PCN41127	78		77.7	mg/Kg		65.3	90.6			
WG333717LCSSD	LCSSD	11/09/12 10:09	PCN41127	78		77.9	mg/Kg		65.3	90.6	0.3	20	
L97384-03MS	MS	11/09/12 10:21	II121029-3	50.5	290	340.7	mg/Kg	100.4	75	125			
L97384-03MSD	MSD	11/09/12 10:24	II121029-3	50.5	290	344.9	mg/Kg	108.7	75	125	1.23	20	

Neutralization Potential as CaCO3 M600/2-78-054 3.2.3 - Modified (No Heat)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333730													
WG333730PBS	PBS	11/12/12 15:36				U	%		-0.1	0.1			
WG333730LCSS	LCSS	11/12/12 17:15	PCN33453	100		102	%	102	80	120			
L97384-01DUP	DUP	11/12/12 20:33			U	U	%				0	20	RA
WG334082													
L97383-20DUP	DUP	11/14/12 11:21			6.4	6.5	%				1.6	20	
WG334082LCSS	LCSS	11/15/12 8:38	PCN33453	100		95	%	95	80	120			
WG334082PBS	PBS	11/15/12 10:59				U	%		-0.1	0.1			

Ph M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333868													
WG333868ICV	ICV	11/10/12 8:51	PCN38642	4		3.98	units	99.5	97	103			
L97384-01DUP	DUP	11/10/12 9:25			4.5	4.54	units				0.9	20	

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333867													
WG333867ICV	ICV	11/10/12 10:34	PCN38642	4		3.98	units	99.5	97	103			
L97384-12DUP	DUP	11/10/12 13:08			6.6	6.64	units				0.6	20	

Solids, Percent

CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333178													
WG333178PBS	PBS	10/30/12 15:30				U	%		99.9	100.1			
L97307-01DUP	DUP	10/30/12 17:04			98.5	98.48	%				0	20	

Sulfur Organic Residual

M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333442													
L97384-01DUP	DUP	11/03/12 12:10			U	U	%				0	20	RA

Sulfur Pyritic Sulfide

M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333442													
L97384-01DUP	DUP	11/03/12 12:10			.01	.01	%				0	20	RA

Sulfur Sulfate

M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333442													
L97384-01DUP	DUP	11/03/12 12:10			.01	.01	%				0	20	RA

Sulfur Total

M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333442													
WG333442LCSS	LCSS	11/02/12 22:03	PCN41310	4.07		4.47	%	109.8					
L97384-01DUP	DUP	11/03/12 12:10			.02	.02	%				0	20	RA

Total Sulfur Minus Sulfate

M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333442													
L97384-01DUP	DUP	11/03/12 12:10			.01	.01	%				0	20	RA

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97384-01	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-02	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-03	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97384-04	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-05	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-06	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97384-07	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-08	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-09	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company ACZ Project ID: **L97384**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97384-10	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-11	WG333999	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-12	WG333999	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-13	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-14	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97384-15	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-16	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97384-17	WG333730	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333442	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98
Sulfur HCl Residue	M600/2-78-054 3.2.4-MOD
Sulfur HNO3 Residue	M600/2-78-054 3.2.4-MOD
Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD
Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD
Sulfur Sulfate	M600/2-78-054 3.2.4-MOD
Sulfur Total	M600/2-78-054 3.2.4-MOD
Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L97384
Date Received: 10/16/2012 10:17
Received By: ksj
Date Printed: 10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		

```
A change was made in the page 2 lines 3-6 and page 3 lines 4-7
section prior to ACZ custody.
```

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3181	14.4	15	Yes
3742	15.1	15	Yes
NA16404	14.4	16	Yes
NA16405	13.8	15	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97384

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
✓ STS-PH-2012-FID37	10/12/12 : 0815	SO	1	x	x	x	x				
✓ STS-PH-2012-ERA3	10/10/12 : 1520	SO	1	x	x	x	x				
✓ STS-PH-2012-FID101	10/12/12 : 0930	SO	1	x	x	x	x				
✓ STS-PH-2012-FID102	10/12/12 : 1115	SO	1	x	x	x	x				
✓ STS-PH-2012-ERA4	10/10/12 : 1148	SO	1	x	x	x	x				
✓ STS-PH-2012-ERA10	10/11/12 : 1430	SO	1	x	x	x	x				
✓ STS-PH-2012-FID105	10/10/12 : 1600	SO	1	x	x	x	x				
✓ STS-PH-2012-FID106	10/11/12 : 1550	SO	1	x	x	x	x				
✓ STS-PH-2012-REFPLOT1	10/8/12 : 1820	SO	1	x	x	x	x				
✓ STS-PH-2012-REFPLOT2	10/9/12 : 1055	SO	1	x	x	x	x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Total Copper - 6010B

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 : [illegible]		10-16-12 10:00

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

L97384 Chain of Custody

ACZ Laboratories, Inc. L97384

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson

Company: Chino Mines Company

E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023

Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley

Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com

Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson

Company: Chino Mines Company

E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023

Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Garett Ferguson

Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Total Copper				
DUP7	10/10/12	SO	1	x	x	x					
DUP8	10/10/12	SO	1	x	x	x					
~~RINSATE1~~	~~10/10/12:0915~~	~~W~~	~~1~~				~~x~~				
~~RINSATE2~~	~~10/10/12:1000~~	~~W~~	~~1~~				~~x~~				
~~RINSATE3~~	~~10/10/12:1115~~	~~W~~	~~1~~				~~x~~				
~~RINSATE4~~	~~10/10/12:1315~~	~~W~~	~~1~~				~~x~~				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 :1300		10-16-12 10:00

2

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L97384

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION — **ANALYSES REQUESTED (attach list or use quote number)**

Quote #:

Project/PO #:

Reporting state for compliance testing:

Sampler's Name: Garett Ferguson

Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
✓ STS-PH-2012-REFPLOT3	10/9/12 : 1755	SO	1	x	x	x	x				
✓ STS-PH-2012-REFPLOT4	10/10/12 : 1310	SO	1	x	x	x	x				
✓ STS-PH-2012-ERA13	10/11/12 : 1155	SO	1	x	x	x	x				
~~DUP11~~ DUP9	10/11/12	SO	1	x	x	x	x				
~~DUP12~~ DUP10	10/11/12	SO ~~SW~~	1	X	X	x	X	LSG 10-16-12			
~~[illegible]~~	~~[illegible] 1225~~										
~~STS-PH-2012-ERA02~~	~~10/10/12 1440~~	~~SO~~	~~1~~								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Total Copper - 6010B

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 : 1300	LSG	10.16.12 10:00

3

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

November 20, 2012

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97382

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97382. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97382. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 20, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-01***
Sample ID:	STS-AMD-2012F-EREF5 0-6	Date Sampled:	*10/10/12 12:40*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 9:49	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	11/19/12 11:15	jjc
Copper, total (3050)	M6010B ICP	918		*	mg/Kg	1	5	11/13/12 20:22	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.3		*	units	0.1	0.1	11/13/12 9:39	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.3		*	%	0.1	0.5	11/12/12 18:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 20:12	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 12:56	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:00	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 15:48	mjj/cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-EREF6 0-6

ACZ Sample ID: ***L97382-02***
Date Sampled: *10/10/12 12:55*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 10:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.08		*	mg/L	0.01	0.05	11/19/12 11:22	jjc
Copper, total (3050)	M6010B ICP	1290		*	mg/Kg	1	5	11/13/12 20:25	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/13/12 9:41	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.7		*	%	0.1	0.5	11/12/12 22:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 22:08	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 13:15	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:03	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:06	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 17:29	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-03***
Sample ID:	STS-AMD-2012F-EREF7 0-6	Date Sampled:	*10/10/12 13:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 10:49	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.44		*	mg/L	0.01	0.05	11/19/12 11:31	jjc
Copper, total (3050)	M6010B ICP	1700		*	mg/Kg	1	5	11/13/12 20:28	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/13/12 9:43	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.2		*	%	0.1	0.5	11/13/12 0:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 0:04	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 13:33	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:07	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:12	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 20:01	mjj/cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-EREF8 0-6

ACZ Sample ID: ***L97382-04***
Date Sampled: *10/10/12 12:50*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 11:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.55		*	mg/L	0.01	0.05	11/19/12 11:34	jjc
Copper, total (3050)	M6010B ICP	1140		*	mg/Kg	1	5	11/13/12 20:31	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.0		*	units	0.1	0.1	11/13/12 9:46	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.9		*	%	0.1	0.5	11/13/12 2:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 2:00	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 13:52	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:11	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:18	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 20:52	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-05***
Sample ID:	STS-AMD-2012F-NREF1 0-6	Date Sampled:	*10/09/12 09:35*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:24	tcd
Total Hot Plate Digestion	M3010A ICP							11/16/12 11:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9310		*	mg/Kg	20	100	11/13/12 20:38	jjc
Copper (1312)	M6010B ICP	0.25		*	mg/L	0.01	0.05	11/19/12 11:37	jjc
Copper, total (3050)	M6010B ICP	1080		*	mg/Kg	1	5	11/13/12 20:38	jjc
Potassium, total (3050)	M6010B ICP	2390		*	mg/Kg	30	200	11/13/12 20:38	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.5	H	*	%	0.1	0.5	11/12/12 10:21	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.5		*	%	0.1	0.5	11/12/12 10:21	cra
pH, Saturated Paste	USDA No. 60 (21A)	6.2		*	units	0.1	0.1	11/13/12 9:48	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.3		*	%	0.1	0.5	11/13/12 4:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 3:55	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 13:00	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 14:11	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:15	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:25	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 21:43	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 19:14	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.2	B		mg/Kg	0.5	3	11/20/12 9:13	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.2	B	*	mg/Kg	0.5	3	11/13/12 23:58	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/13/12 23:58	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	6	B	*	mg/Kg	3	30	11/14/12 14:23	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.024		*	%	0.002	0.008	10/30/12 14:01	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-06***
Sample ID:	STS-AMD-2012F-NREF2 0-6	Date Sampled:	*10/09/12 10:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:24	tcd
Total Hot Plate Digestion	M3010A ICP							11/16/12 11:25	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9750		*	mg/Kg	20	100	11/13/12 20:41	jjc
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	11/19/12 11:46	jjc
Copper, total (3050)	M6010B ICP	425		*	mg/Kg	1	5	11/13/12 20:41	jjc
Potassium, total (3050)	M6010B ICP	2190		*	mg/Kg	30	200	11/13/12 20:41	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.8	H	*	%	0.1	0.5	11/12/12 11:12	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/12/12 11:12	cra
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/13/12 9:50	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.2		*	%	0.1	0.5	11/13/12 6:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 5:51	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 13:17	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 14:30	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:19	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:31	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 22:34	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 19:42	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.6	B		mg/Kg	0.5	3	11/20/12 9:13	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.6	B	*	mg/Kg	0.5	3	11/13/12 23:59	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/13/12 23:59	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:24	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.023		*	%	0.001	0.006	10/30/12 14:02	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-NREF1@DEPTH

ACZ Sample ID: ***L97382-07***
Date Sampled: *10/09/12 09:50*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 13:04	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/16/12 11:37	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8600		*	mg/Kg	20	100	11/13/12 20:50	jjc
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/19/12 11:49	jjc
Copper, total (3050)	M6010B ICP	231		*	mg/Kg	1	5	11/13/12 20:50	jjc
Potassium, total (3050)	M6010B ICP	2060		*	mg/Kg	30	200	11/13/12 20:50	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.7	H	*	%	0.1	0.5	11/12/12 11:38	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	11/12/12 11:38	cra
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	11/13/12 9:53	mss2
Solids, Percent	CLPSOW390, PART F, D-98	90.8		*	%	0.1	0.5	11/13/12 8:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 7:47	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 13:34	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 14:48	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:23	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:37	scp
Synthetic Precip. Leaching Procedure	M1312							11/14/12 23:24	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 20:10	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		U		mg/Kg	0.5	3	11/20/12 9:13	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.5	3	11/14/12 0:00	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/14/12 0:00	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:26	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.034		*	%	0.002	0.01	11/02/12 12:24	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-NREF2@DEPTH

ACZ Sample ID: ***L97382-08***
Date Sampled: *10/09/12 10:25*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 13:53	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/16/12 11:49	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9830		*	mg/Kg	20	100	11/13/12 20:53	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/19/12 11:52	jjc
Copper, total (3050)	M6010B ICP	109		*	mg/Kg	1	5	11/13/12 20:53	jjc
Potassium, total (3050)	M6010B ICP	1900		*	mg/Kg	30	200	11/13/12 20:53	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.7	H	*	%	0.1	0.5	11/12/12 12:04	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.6		*	%	0.1	0.5	11/12/12 12:04	cra
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	11/13/12 9:55	mss2
Solids, Percent	CLPSOW390, PART F, D-98	90.9		*	%	0.1	0.5	11/13/12 10:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 9:43	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 13:51	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 15:07	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:27	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:44	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 0:15	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 20:38	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		U		mg/Kg	0.1	0.5	11/20/12 9:14	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.1	B	*	mg/Kg	0.1	0.5	11/14/12 0:01	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.05	B	*	mg/Kg	0.05	0.3	11/14/12 0:01	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:27	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.052		*	%	0.002	0.01	11/02/12 12:12	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-09***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 10:30*
Sample ID:	STS-AMD-2012F-NREF3 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 12:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.26		*	mg/L	0.01	0.05	11/19/12 11:55	jjc
Copper, total (3050)	M6010B ICP	1160		*	mg/Kg	1	5	11/13/12 20:56	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.3		*	units	0.1	0.1	11/13/12 9:57	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.8		*	%	0.1	0.5	11/13/12 12:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 11:39	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 15:26	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:30	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:50	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 1:06	mjj/cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-10***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 11:00*
Sample ID:	STS-AMD-2012F-NREF4 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 12:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.41		*	mg/L	0.01	0.05	11/19/12 11:58	jjc
Copper, total (3050)	M6010B ICP	1780		*	mg/Kg	1	5	11/13/12 21:05	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	11/13/12 9:59	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.9		*	%	0.1	0.5	11/13/12 14:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 13:35	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 16:22	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:34	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 13:56	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 1:56	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-11***
Sample ID:	STS-AMD-2012F-NREF5 0-6	Date Sampled:	*10/09/12 10:40*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 12:25	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.19		*	mg/L	0.01	0.05	11/19/12 12:01	jjc
Copper, total (3050)	M6010B ICP	855		*	mg/Kg	1	5	11/13/12 21:08	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	11/13/12 10:04	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.1		*	%	0.1	0.5	11/13/12 16:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 15:30	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 16:41	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:38	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:03	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 2:47	mjj/cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-12***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 10:45*
Sample ID:	STS-AMD-2012F-NREF6 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 12:37	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.33		*	mg/L	0.01	0.05	11/19/12 12:04	jjc
Copper, total (3050)	M6010B ICP	1570		*	mg/Kg	1	5	11/13/12 21:11	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.4		*	units	0.1	0.1	11/13/12 10:06	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.0		*	%	0.1	0.5	11/13/12 18:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 17:26	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 17:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:42	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:09	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 3:38	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-13***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 11:10*
Sample ID:	STS-AMD-2012F-NREF7 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 12:49	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.22		*	mg/L	0.01	0.05	11/19/12 12:10	jjc
Copper, total (3050)	M6010B ICP	1060		*	mg/Kg	1	5	11/13/12 21:14	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.5		*	units	0.1	0.1	11/13/12 10:09	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.0		*	%	0.1	0.5	11/13/12 20:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 19:22	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 17:18	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:46	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:15	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 4:28	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-14***
Sample ID:	STS-AMD-2012F-NREF8 0-6	Date Sampled:	*10/09/12 11:20*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 13:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.17		*	mg/L	0.01	0.05	11/19/12 12:13	jjc
Copper, total (3050)	M6010B ICP	621		*	mg/Kg	1	5	11/13/12 21:17	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.0		*	units	0.1	0.1	11/13/12 10:11	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.6		*	%	0.1	0.5	11/13/12 22:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 21:18	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 17:37	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:50	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:22	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 5:19	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-15***
Sample ID:	STS-AMD-2012F-NEREF1 0-6	Date Sampled:	*10/09/12 14:55*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 14:42	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/16/12 13:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5940		*	mg/Kg	20	100	11/13/12 21:27	jjc
Copper (1312)	M6010B ICP	0.35		*	mg/L	0.01	0.05	11/19/12 12:22	jjc
Copper, total (3050)	M6010B ICP	1760		*	mg/Kg	1	5	11/13/12 21:27	jjc
Potassium, total (3050)	M6010B ICP	3810		*	mg/Kg	30	200	11/13/12 21:27	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.8	H	*	%	0.1	0.5	11/12/12 12:30	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	11/12/12 12:30	cra
pH, Saturated Paste	USDA No. 60 (21A)	6.4		*	units	0.1	0.1	11/13/12 10:13	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.2		*	%	0.1	0.5	11/14/12 0:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/06/12 23:14	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 14:08	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 17:56	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:54	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:28	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 6:10	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 21:07	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.8	B		mg/Kg	0.5	3	11/20/12 9:15	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.8	B	*	mg/Kg	0.5	3	11/14/12 0:02	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/14/12 0:02	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 14:28	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.064		*	%	0.002	0.01	11/02/12 12:14	tcd

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-16***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 14:30*
Sample ID:	STS-AMD-2012F-NEREF2 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 15:07	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/16/12 13:25	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	3600		*	mg/Kg	20	100	11/13/12 21:30	jjc
Copper (1312)	M6010B ICP	0.27		*	mg/L	0.01	0.05	11/19/12 12:26	jjc
Copper, total (3050)	M6010B ICP	2040		*	mg/Kg	1	5	11/13/12 21:30	jjc
Potassium, total (3050)	M6010B ICP	3380		*	mg/Kg	30	200	11/13/12 21:30	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.9	H	*	%	0.1	0.5	11/12/12 12:55	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.7		*	%	0.1	0.5	11/12/12 12:55	cra
pH, Saturated Paste	USDA No. 60 (21A)	5.0		*	units	0.1	0.1	11/13/12 10:16	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.6		*	%	0.1	0.5	11/14/12 2:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 1:09	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 14:25	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 18:15	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:58	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:34	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 7:01	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 21:35	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.9			mg/Kg	0.1	0.5	11/20/12 9:15	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	9.0		*	mg/Kg	0.1	0.5	11/14/12 0:03	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	11/14/12 0:03	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:29	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.080		*	%	0.002	0.01	11/02/12 12:17	tcd

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-17***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 15:10*
Sample ID:	STS-AMD-2012F-NEREF1@DEPTH	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 15:32	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/16/12 13:37	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7370		*	mg/Kg	20	100	11/13/12 21:33	jjc
Copper (1312)	M6010B ICP	0.01	B	*	mg/L	0.01	0.05	11/19/12 12:29	jjc
Copper, total (3050)	M6010B ICP	146		*	mg/Kg	1	5	11/13/12 21:33	jjc
Potassium, total (3050)	M6010B ICP	3460		*	mg/Kg	30	200	11/13/12 21:33	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/12/12 13:21	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	11/12/12 13:21	cra
pH, Saturated Paste	USDA No. 60 (21A)	6.7		*	units	0.1	0.1	11/13/12 10:18	mss2
Solids, Percent	CLPSOW390, PART F, D-98	85.5		*	%	0.1	0.5	11/14/12 4:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 3:05	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 14:42	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 18:33	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:01	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:41	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 7:51	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 22:03	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2		U		mg/Kg	0.5	3	11/20/12 9:15	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.5	3	11/14/12 0:05	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/14/12 0:05	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5	B	*	mg/Kg	3	30	11/14/12 16:21	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.081		*	%	0.003	0.02	11/02/12 12:18	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97382-18***
Sample ID:	STS-AMD-2012F-NEREF2@DEPTH	Date Sampled:	*10/09/12 14:45*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 15:56	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/16/12 13:49	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	18800		*	mg/Kg	20	100	11/13/12 21:36	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/19/12 12:32	jjc
Copper, total (3050)	M6010B ICP	167		*	mg/Kg	1	6	11/13/12 21:36	jjc
Potassium, total (3050)	M6010B ICP	5040		*	mg/Kg	30	200	11/13/12 21:36	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1	H	*	%	0.1	0.5	11/12/12 13:47	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/12/12 13:47	cra
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/13/12 10:20	mss2
Solids, Percent	CLPSOW390, PART F, D-98	83.9		*	%	0.1	0.5	11/14/12 6:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 5:01	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/09/12 15:00	scp
Digestion - Hot Plate	M3050B ICP							11/12/12 18:52	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:05	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:47	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 8:42	mjj/cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 22:31	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.4			mg/Kg	0.1	0.5	11/20/12 9:15	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.5		*	mg/Kg	0.1	0.5	11/14/12 0:06	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.09	B	*	mg/Kg	0.05	0.3	11/14/12 0:06	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	11/14/12 14:31	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.0702		*	%	0.0004	0.002	11/02/12 12:21	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-NEREF3 0-6

ACZ Sample ID: ***L97382-19***
Date Sampled: *10/09/12 15:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 14:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.52		*	mg/L	0.01	0.05	11/19/12 12:35	jjc
Copper, total (3050)	M6010B ICP	3540		*	mg/Kg	1	5	11/13/12 21:39	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.4		*	units	0.1	0.1	11/13/12 10:22	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.3		*	%	0.1	0.5	11/14/12 8:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 6:57	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 19:11	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:09	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 14:53	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 9:33	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97382-20***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 15:40*
Sample ID:	STS-AMD-2012F-NEREF4 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/16/12 14:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.45		*	mg/L	0.01	0.05	11/19/12 12:38	jjc
Copper, total (3050)	M6010B ICP	1510		*	mg/Kg	1	5	11/13/12 21:42	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.6		*	units	0.1	0.1	11/13/12 10:25	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.3		*	%	0.1	0.5	11/14/12 10:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 8:53	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 19:30	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:13	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/09/12 15:00	scp
Synthetic Precip. Leaching Procedure	M1312							11/15/12 10:23	mjj/cdb

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334021													
WG334021ICV	ICV	11/13/12 19:58	II120914-3	100		98.11	mg/L	98.1	90	110			
WG334021ICB	ICB	11/13/12 20:01				U	mg/L		-0.6	0.6			
WG333918PBS	PBS	11/13/12 20:13				U	mg/Kg		-60	60			
WG333918LCSS	LCSS	11/13/12 20:16	PCN41127	6160		6194	mg/Kg		5070	7240			
WG333918LCSSD	LCSSD	11/13/12 20:19	PCN41127	6160		6510	mg/Kg		5070	7240	5	20	
L97382-09MS	MS	11/13/12 20:59	II121029-3	7001.48062	5280	11969	mg/Kg	95.5	75	125			
L97382-09MSD	MSD	11/13/12 21:02	II121029-3	7001.48062	5280	11670	mg/Kg	91.3	75	125	2.53	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333902													
WG333902PBS	PBS	11/12/12 9:30				U	%		-0.3	0.3			
WG333902LCSS	LCSS	11/12/12 9:55	PCN41310	4.19		4.3	%		80	120			
L97382-05DUP	DUP	11/12/12 10:47			.5	.5	%				0	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333902													
WG333902PBS	PBS	11/12/12 9:30				U	%		-0.3	0.3			
L97382-05DUP	DUP	11/12/12 10:47			.5	.5	%				0	20	RA ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334353													
WG334353ICV	ICV	11/19/12 10:54	II120914-3	2		1.899	mg/L	95	90	110			
WG334353ICB	ICB	11/19/12 10:57				U	mg/L		-0.03	0.03			
WG334100PBS	PBS	11/19/12 11:09				U	mg/L		-0.03	0.03			
WG334100LFB	LFB	11/19/12 11:12	II121029-3	.5		.516	mg/L	103.2	85	115			
L97382-01DUP	DUP	11/19/12 11:18			.07	.087	mg/L				21.7	20	RA
L97382-02MS	MS	11/19/12 11:25	II121029-3	.5	.08	.585	mg/L	101	75	125			
L97382-02MSD	MSD	11/19/12 11:28	II121029-3	.5	.08	.589	mg/L	101.8	75	125	0.68	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334021													
WG334021ICV	ICV	11/13/12 19:58	II120914-3	2		1.948	mg/L	97.4	90	110			
WG334021ICB	ICB	11/13/12 20:01				U	mg/L		-0.03	0.03			
WG333918PBS	PBS	11/13/12 20:13				U	mg/Kg		-3	3			
WG333918LCSS	LCSS	11/13/12 20:16	PCN41127	78		79.8	mg/Kg		65.3	90.6			
WG333918LCSSD	LCSSD	11/13/12 20:19	PCN41127	78		82.3	mg/Kg		65.3	90.6	3.1	20	
L97382-09MS	MS	11/13/12 20:59	II121029-3	51.5	1160	1198.9	mg/Kg	75.5	75	125			
L97382-09MSD	MSD	11/13/12 21:02	II121029-3	51.5	1160	1288.5	mg/Kg	249.5	75	125	7.2	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	2.416		2.448	mg/L	101.3	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.06	0.06			
WG334068													
WG334068LFB	LFB	11/13/12 23:42	WI120814-9	2		2.02	mg/Kg	101	90	110			
WG333948PBS	PBS	11/13/12 23:44				U	mg/Kg		-0.3	0.3			
L97381-05AS	AS	11/13/12 23:46	WI120814-9	10	1.9	12.75	mg/Kg	108.5	90	110			
L97382-18DUP	DUP	11/14/12 0:07			2.5	2.57	mg/Kg				2.8	20	

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	.609		.62	mg/L	101.8	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.03	0.03			
WG334068													
WG334068LFB	LFB	11/13/12 23:42	WI120814-9	1		1.037	mg/Kg	103.7	90	110			
WG333948PBS	PBS	11/13/12 23:44				U	mg/Kg		-0.15	0.15			
L97381-05AS	AS	11/13/12 23:46	WI120814-9	5	.23	5.459	mg/Kg	104.6	90	110			
L97382-18DUP	DUP	11/14/12 0:07			.09	.065	mg/Kg				32.3	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334103													
WG334103ICV	ICV	11/14/12 12:02	WI121105-5	1.003		.995	mg/L	99.2	90	110			
WG334103ICB	ICB	11/14/12 12:03				U	mg/L		-0.15	0.15			
WG334131													
WG334131LFB	LFB	11/14/12 14:09	WI111101-3	1		.946	mg/L	94.6	90	110			
WG333948PBS	PBS	11/14/12 14:10				U	mg/Kg		-0.9	0.9			
L97381-05MS	MS	11/14/12 14:12	NH3-WE50X	2500	U	51.4	mg/Kg	102.8	75	125			
L97382-18DUP	DUP	11/14/12 14:32			U	U	mg/Kg				0	20	RA

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L97382***

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333155													
WG333155ICV	ICV	10/30/12 12:55	WI121005-1	4		3.96	mg/L	99	90	110			
WG333155ICB	ICB	10/30/12 12:57				.11	mg/L		-0.3	0.3			
WG333157													
WG333088PBS	PBS	10/30/12 13:45				U	%		-0.006	0.006			
WG333088LFB	LFB	10/30/12 13:46	WI120814-2	2.5		2.65	%	106	85	115			
L97307-01MS	MS	10/30/12 13:49	WI120814-2	.045	.011	.059	%	106.7	75	125			
L97307-02DUP	DUP	10/30/12 14:14			.466	.4055	%				13.9	20	
WG333403													
WG333403ICV	ICV	11/02/12 11:48	WI121005-1	4		4.03	mg/L	100.8	90	110			
WG333403ICB	ICB	11/02/12 11:49				U	mg/L		-0.3	0.3			
WG333336PBS	PBS	11/02/12 11:50				.00032	%		-0.0006	0.0006			
WG333336LFB	LFB	11/02/12 11:51	WI120814-2	2.5		2.66	%	106.4	85	115			
L97382-08DUP	DUP	11/02/12 12:13			.052	.0426	%				19.9	20	
L97382-07MS	MS	11/02/12 12:25	10XPTSTKN	.0055	.034	.0468	%	232.7	75	125			M3

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333994													
WG333994ICV	ICV	11/13/12 9:36	PCN38642	4		3.98	units	99.5	97	103			
L97382-20DUP	DUP	11/13/12 10:29			5.6	5.56	units				0.7	20	
L97383-10DUP	DUP	11/13/12 10:57			7.9	7.84	units				0.8	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334021													
WG334021ICV	ICV	11/13/12 19:58	II120914-3	20		19.76	mg/L	98.8	90	110			
WG334021ICB	ICB	11/13/12 20:01				U	mg/L		-0.9	0.9			
WG333918PBS	PBS	11/13/12 20:13				U	mg/Kg		-90	90			
WG333918LCSS	LCSS	11/13/12 20:16	PCN41127	3820		4301	mg/Kg		2810	4830			
WG333918LCSSD	LCSSD	11/13/12 20:19	PCN41127	3820		4382	mg/Kg		2810	4830	1.9	20	
L97382-09MS	MS	11/13/12 20:59	II121029-3	10290.59404	3600	14183	mg/Kg	102.8	75	125			
L97382-09MSD	MSD	11/13/12 21:02	II121029-3	10290.59404	3600	13565	mg/Kg	96.8	75	125	4.45	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333960													
WG333960PBS	PBS	11/12/12 16:00				U	%		99.9	100.1			
L97382-01DUP	DUP	11/12/12 20:00			94.3	94.07	%				0.2	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-01	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-02	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-03	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-04	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-05	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-06	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-07	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-08	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97382-09	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-10	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-11	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-12	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-13	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-14	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-15	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-16	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-17	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97382-18	WG334021	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97382-19	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97382-20	WG334353	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334021	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L97382
Date Received: 10/16/2012 10:17
Received By: ksj
Date Printed: 10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
3181           14.4           15               Yes
3638           14.6           15               Yes
3742           15.1           15               Yes
NA16402        14.8           17               Yes
NA16406        14.7           15               Yes
NA16407        14.5           18               Yes
NA16408        14.6           16               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97382

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-EREF5 0-6	10/10/12 : 1240	SO	1	x	x	x					
STS-AMD-2012F-EREF6 0-6	10/10/12 : 1255	SO	1	x	x	x					
STS-AMD-2012F-EREF7 0-6	10/10/12 : 1300	SO	1	x	x	x					
STS-AMD-2012F-EREF8 0-6	10/10/12 : 1250	SO	1	x	x	x					
STS-AMD-2012F-NREF1 0-6	10/9/12 : 0935	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NREF2 0-6	10/9/12 : 1010	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NREF1@depth	10/9/12 : 0950	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-NREF2@depth	10/9/12 : 1025	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-NREF3 0-6	10/9/12 : 1030	SO	1	x	x	x					
STS-AMD-2012F-NREF4 0-6	10/9/12 : 1100	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM 4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 : 1300		10.16.12 10:00

L97382 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L97382

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED

SAMPLE IDENTIFICATION	DATE/TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (See below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)
STS-AMD-2012F-NREF5 0-6	10/9/12: 1040	SO	1	x	x	x				
STS-AMD-2012F-NREF6 0-6	10/9/12: 1045	SO	1	x	x	x				
STS-AMD-2012F-NREF7 0-6	10/9/12: 1110	SO	1	x	x	x				
STS-AMD-2012F-NREF8 0-6	10/9/12: 1120	SO	1	x	x	x				
STS-AMD-2012F-NEREF1 0-6	10/9/12: 1455	SO	1	x	x	x	x	x	x	x
STS-AMD-2012F-NEREF2 0-6	10/9/12: 1430	SO	1	x	x	x	x	x	x	x
STS-AMD-2012F-NEREF1@depth	10/9/12: 1510	SO	1	x	x	x	x	x	x	x
STS-AMD-2012F-NEREF2@depth	10/9/12: 1445	SO	1	x	x	x	x	x	x	x
STS-AMD-2012F-NEREF3 0-6	10/9/12: 1530	SO	1	x	x	x				
STS-AMD-2012F-NEREF4 0-6	10/9/12: 1540	SO	1	x	x	x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
	10/12/12 : 1300		10-16-12 10:00

2

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

November 21, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97383

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97383. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97383. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 21, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97383-01***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 15:45*
Sample ID:	STS-AMD-2012F-NEREF5 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/19/12 14:01	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.22			mg/L	0.01	0.05	11/20/12 14:21	aeb
Copper, total (3050)	M6010B ICP	1490		*	mg/Kg	1	5	11/13/12 14:58	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	11/13/12 10:32	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.6		*	%	0.1	0.5	11/12/12 18:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 10:49	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 12:56	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:21	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:00	brd
Synthetic Precip. Leaching Procedure	M1312							11/15/12 2:03	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97383-02***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 15:50*
Sample ID:	STS-AMD-2012F-NEREF6 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/19/12 14:42	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.15			mg/L	0.01	0.05	11/20/12 14:27	aeb
Copper, total (3050)	M6010B ICP	1070		*	mg/Kg	1	5	11/13/12 15:01	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	11/13/12 10:34	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.9		*	%	0.1	0.5	11/12/12 22:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 12:44	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 13:15	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:25	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:06	brd
Synthetic Precip. Leaching Procedure	M1312							11/15/12 6:54	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-03***
Sample ID:	STS-AMD-2012F-NEREF7 0-6	Date Sampled:	*10/09/12 16:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/19/12 15:45	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.55			mg/L	0.01	0.05	11/20/12 14:36	aeb
Copper, total (3050)	M6010B ICP	3240		*	mg/Kg	1	5	11/13/12 15:04	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.7		*	units	0.1	0.1	11/13/12 10:36	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.5		*	%	0.1	0.5	11/13/12 0:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 14:40	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 13:33	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:28	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:12	brd
Synthetic Precip. Leaching Procedure	M1312							11/15/12 14:10	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-04***
Sample ID:	STS-AMD-2012F-NEREF8 0-6	Date Sampled:	*10/09/12 16:05*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/19/12 16:05	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.37			mg/L	0.01	0.05	11/20/12 14:39	aeb
Copper, total (3050)	M6010B ICP	3490		*	mg/Kg	1	5	11/13/12 15:07	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.1		*	units	0.1	0.1	11/13/12 10:39	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.2		*	%	0.1	0.5	11/13/12 2:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 16:36	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 13:52	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:32	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:18	brd
Synthetic Precip. Leaching Procedure	M1312							11/15/12 16:36	cdb

** Please refer to Qualifier Reports for details.*

Inherently Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97383-05***
Project ID:	ZN000001M5	Date Sampled:	*10/08/12 00:00*
Sample ID:	DUP1	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 16:21	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/19/12 16:26	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	13300			mg/Kg	20	100	11/13/12 15:10	jjc
Copper (1312)	M6010B ICP	0.41			mg/L	0.01	0.05	11/20/12 14:43	aeb
Copper, total (3050)	M6010B ICP	1490		*	mg/Kg	1	5	11/13/12 15:10	jjc
Potassium, total (3050)	M6010B ICP	2650			mg/Kg	30	200	11/13/12 15:10	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.5	H	*	%	0.1	0.5	11/12/12 14:12	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/12/12 14:12	cra
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/13/12 10:41	mss2
Solids, Percent	CLPSOW390, PART F, D-98	97.6		*	%	0.1	0.5	11/13/12 4:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 18:32	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:00	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 14:11	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:36	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:25	brd
Synthetic Precip. Leaching Procedure	M1312							11/15/12 19:01	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 21:07	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.0			mg/Kg	0.1	0.5	11/21/12 9:47	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.3		*	mg/Kg	0.1	0.5	11/13/12 22:32	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.27	B	*	mg/Kg	0.05	0.3	11/13/12 22:32	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:51	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.273		*	%	0.008	0.04	11/02/12 12:20	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-06***
Sample ID:	DUP2	Date Sampled:	*10/09/12 00:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 16:46	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/19/12 16:47	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8230			mg/Kg	20	100	11/13/12 15:13	jjc
Copper (1312)	M6010B ICP	0.70			mg/L	0.01	0.05	11/20/12 14:55	aeb
Copper, total (3050)	M6010B ICP	1490		*	mg/Kg	1	5	11/13/12 15:13	jjc
Potassium, total (3050)	M6010B ICP	4050			mg/Kg	30	200	11/13/12 15:13	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.3	H	*	%	0.1	0.5	11/12/12 14:38	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.8		*	%	0.1	0.5	11/12/12 14:38	cra
pH, Saturated Paste	USDA No. 60 (21A)	7.0		*	units	0.1	0.1	11/13/12 10:43	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.1		*	%	0.1	0.5	11/13/12 6:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 20:28	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:09	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 14:30	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:40	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:31	brd
Synthetic Precip. Leaching Procedure	M1312							11/15/12 23:52	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 21:35	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	50.1			mg/Kg	0.5	3	11/21/12 9:47	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	50.7		*	mg/Kg	0.5	3	11/13/12 22:33	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.6	B	*	mg/Kg	0.3	1	11/13/12 22:33	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 13:52	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.0554		*	%	0.0005	0.003	11/02/12 12:22	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97383-07***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 00:00*
Sample ID:	DUP3	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 17:10	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/19/12 17:07	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4990			mg/Kg	20	100	11/13/12 15:16	jjc
Copper (1312)	M6010B ICP	0.77			mg/L	0.01	0.05	11/20/12 14:59	aeb
Copper, total (3050)	M6010B ICP	1670		*	mg/Kg	1	5	11/13/12 15:16	jjc
Potassium, total (3050)	M6010B ICP	2430			mg/Kg	30	200	11/13/12 15:16	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/12/12 15:04	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/12/12 15:04	cra
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	11/13/12 10:45	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.9		*	%	0.1	0.5	11/13/12 8:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/07/12 22:23	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:18	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 14:48	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:44	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:37	brd
Synthetic Precip. Leaching Procedure	M1312							11/16/12 2:18	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 22:03	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	5.2			mg/Kg	0.5	3	11/21/12 9:48	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.2		*	mg/Kg	0.5	3	11/13/12 22:34	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/13/12 22:34	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 13:53	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.0956		*	%	0.0006	0.003	11/02/12 12:06	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-08***
Sample ID:	DUP4	Date Sampled:	*10/09/12 00:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							11/01/12 17:35	bsu/mpb
Total Hot Plate Digestion	M3010A ICP							11/19/12 17:28	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5300			mg/Kg	20	100	11/13/12 15:25	jjc
Copper (1312)	M6010B ICP	0.20			mg/L	0.01	0.05	11/20/12 15:05	aeb
Copper, total (3050)	M6010B ICP	2480		*	mg/Kg	1	5	11/13/12 15:25	jjc
Potassium, total (3050)	M6010B ICP	3930			mg/Kg	30	200	11/13/12 15:25	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.4	H	*	%	0.1	0.5	11/12/12 15:30	cra
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.9		*	%	0.1	0.5	11/12/12 15:30	cra
pH, Saturated Paste	USDA No. 60 (21A)	5.6		*	units	0.1	0.1	11/13/12 10:48	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.2		*	%	0.1	0.5	11/13/12 10:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 0:19	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:27	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 15:07	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:48	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:44	brd
Synthetic Precip. Leaching Procedure	M1312							11/16/12 4:43	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 22:31	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	17.6			mg/Kg	0.1	0.5	11/21/12 9:48	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	17.7		*	mg/Kg	0.1	0.5	11/13/12 22:35	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	11/13/12 22:35	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	3	B	*	mg/Kg	3	30	11/14/12 13:54	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.0863		*	%	0.0007	0.004	11/02/12 12:07	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP5

ACZ Sample ID: ***L97383-09***
Date Sampled: *10/09/12 00:00*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/19/12 17:49	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	11/20/12 15:08	aeb
Copper, total (3050)	M6010B ICP	159		*	mg/Kg	1	5	11/13/12 15:28	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/13/12 10:50	mss2
Solids, Percent	CLPSOW390, PART F, D-98	83.5		*	%	0.1	0.5	11/13/12 12:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 2:15	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 15:26	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:52	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:50	brd
Synthetic Precip. Leaching Procedure	M1312							11/16/12 7:09	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: DUP6

ACZ Sample ID: ***L97383-10***
Date Sampled: *10/10/12 00:00*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/19/12 18:10	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	11/20/12 15:11	aeb
Copper, total (3050)	M6010B ICP	52		*	mg/Kg	1	5	11/13/12 15:38	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/13/12 10:55	mss2
Solids, Percent	CLPSOW390, PART F, D-98	81.5		*	%	0.1	0.5	11/13/12 14:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 4:11	mjj
Digestion - Hot Plate	M3050B ICP							11/12/12 16:22	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:56	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 9:56	brd
Synthetic Precip. Leaching Procedure	M1312							11/16/12 9:34	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-11***
Sample ID:	STS-PH-2012-FID7	Date Sampled:	*10/11/12 15:15*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	514		*	mg/Kg	1	5	11/13/12 15:41	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	8			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	8			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.8		*	%	0.1	0.5	11/14/12 9:00	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.7			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	95.6		*	%	0.1	0.5	11/13/12 16:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 6:07	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:36	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 16:41	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:03	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-FID8

ACZ Sample ID: ***L97383-12***
Date Sampled: *10/12/12 10:40*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	252		*	mg/Kg	1	5	11/13/12 15:44	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	3	B		t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	3			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	0			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.3	B	*	%	0.1	0.5	11/14/12 12:03	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.5			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	94.9		*	%	0.1	0.5	11/13/12 18:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.04	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.04	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate		0.07	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.11		*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.04	B	*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 8:02	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:46	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 17:00	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:09	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97383-13***
Project ID:	ZN000001M5	Date Sampled:	*10/11/12 08:20*
Sample ID:	STS-PH-2012-FID10	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	2210		*	mg/Kg	1	5	11/13/12 15:50	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	2	B		t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	1			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-1			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.1	B	*	%	0.1	0.5	11/14/12 13:35	nrc
pH, Corrosivity	M9045D/M9040C								
pH		5.0			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	95.5		*	%	0.1	0.5	11/13/12 20:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.05	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.05	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.05	B	*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.05	B	*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 9:58	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 9:55	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 17:18	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:15	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-14***
Sample ID:	STS-PH-2012-FID15	Date Sampled:	*10/11/12 17:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	1030		*	mg/Kg	1	5	11/13/12 15:53	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	2			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	2			t CaCO3/Kt	1	5	11/21/12 9:48	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.2	B	*	%	0.1	0.5	11/14/12 15:07	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.6			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.2		*	%	0.1	0.5	11/13/12 22:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate		0.01	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.03	B	*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 11:54	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 10:04	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 17:37	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:22	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-FID16

ACZ Sample ID: ***L97383-15***
Date Sampled: *10/11/12 17:45*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	1450		*	mg/Kg	1	5	11/13/12 16:02	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	2	B		t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	0.0			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-2			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)		U	*	%	0.1	0.5	11/14/12 16:38	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.3			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.0		*	%	0.1	0.5	11/14/12 0:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.04	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.04	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate		0.02	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.06	B	*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.04	B	*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 13:50	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 10:13	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 17:56	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:28	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97383-16***
Project ID:	ZN000001M5	Date Sampled:	*10/11/12 09:05*
Sample ID:	STS-PH-2012-FID17	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	5150		*	mg/Kg	1	5	11/13/12 16:05	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	21			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	5			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-16			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.5	B	*	%	0.1	0.5	11/14/12 18:10	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.9			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	95.9		*	%	0.1	0.5	11/14/12 2:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.61		*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue		0.05	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual		0.05	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.56		*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate		0.07	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.68		*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.61		*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 15:46	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 10:23	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 18:15	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:34	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-17***
Sample ID:	STS-PH-2012-FID18	Date Sampled:	*10/12/12 09:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	192		*	mg/Kg	1	5	11/13/12 16:08	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	5	B		t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	1			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-4			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.1	B	*	%	0.1	0.5	11/14/12 19:42	nrc
pH, Corrosivity	M9045D/M9040C								
pH		4.4			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.6		*	%	0.1	0.5	11/14/12 4:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.09	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Pyritic Sulfide		0.09	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Sulfate		0.06	B	*	%	0.01	0.1	11/12/12 0:00	cra
Sulfur Total		0.15		*	%	0.01	0.1	11/12/12 0:00	cra
Total Sulfur minus Sulfate		0.09	B	*	%	0.01	0.1	11/12/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 17:42	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 10:32	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 18:33	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:41	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-FID22

ACZ Sample ID: ***L97383-18***
Date Sampled: *10/11/12 13:45*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	308		*	mg/Kg	1	5	11/13/12 16:11	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	3	B		t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	5			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	2			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	0.5	B	*	%	0.1	0.5	11/14/12 21:14	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.4			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	95.7		*	%	0.1	0.5	11/14/12 6:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.07	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Pyritic Sulfide		0.07	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Sulfate		0.03	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Total		0.10		*	%	0.01	0.1	11/13/12 0:00	cra
Total Sulfur minus Sulfate		0.07	B	*	%	0.01	0.1	11/13/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 19:37	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 10:41	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 18:52	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:47	brd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-PH-2012-ERA2

ACZ Sample ID: ***L97383-19***
Date Sampled: *10/10/12 14:40*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	960		*	mg/Kg	1	5	11/13/12 16:14	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	5	B		t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	0.0			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-5			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)		U	*	%	0.1	0.5	11/14/12 22:45	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.4			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	95.9		*	%	0.1	0.5	11/14/12 8:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.09	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur HNO3 Residue		0.02	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Organic Residual		0.02	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Pyritic Sulfide		0.07	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Sulfate		0.06	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Total		0.15		*	%	0.01	0.1	11/13/12 0:00	cra
Total Sulfur minus Sulfate		0.09	B	*	%	0.01	0.1	11/13/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 21:33	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 10:50	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 19:11	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 10:53	brd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97383-20***
Sample ID:	STS-PH-2012-FID28	Date Sampled:	*10/11/12 11:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total (3050)	M6010B ICP	271		*	mg/Kg	1	5	11/13/12 16:17	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	0			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	64			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	64			t CaCO3/Kt	1	5	11/21/12 9:49	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	6.4		*	%	0.1	0.5	11/14/12 9:00	nrc
pH, Corrosivity	M9045D/M9040C								
pH		6.7			units	0.1	0.1	11/14/12 0:00	nrc
pH measured at		22.7			C	0.1	0.1	11/14/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.9		*	%	0.1	0.5	11/14/12 10:00	mjj
Sulfur Forms	M600/2-78-054 3.2.4-MOD								
Sulfur HCl Residue		0.05	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur HNO3 Residue			U	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Organic Residual			U	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Pyritic Sulfide		0.05	B	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Sulfate			U	*	%	0.01	0.1	11/13/12 0:00	cra
Sulfur Total			U	*	%	0.01	0.1	11/13/12 0:00	cra
Total Sulfur minus Sulfate			U	*	%	0.01	0.1	11/13/12 0:00	cra

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/08/12 23:29	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/12/12 11:00	brd
Digestion - Hot Plate	M3050B ICP							11/12/12 19:30	mjj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/12/12 11:00	brd

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334022													
WG334022ICV	ICV	11/13/12 14:33	II120914-3	100		98.44	mg/L	98.4	90	110			
WG334022ICB	ICB	11/13/12 14:36				U	mg/L		-0.6	0.6			
WG333921PBS	PBS	11/13/12 14:49				U	mg/Kg		-60	60			
WG333921LCSS	LCSS	11/13/12 14:52	PCN41127	6160		6452	mg/Kg		5070	7240			
WG333921LCSSD	LCSSD	11/13/12 14:55	PCN41127	6160		6268	mg/Kg		5070	7240	2.9	20	
L97383-09MS	MS	11/13/12 15:31	II121029-3	7069.45616	8320	14789	mg/Kg	91.5	75	125			
L97383-09MSD	MSD	11/13/12 15:34	II121029-3	7069.45616	8320	14945	mg/Kg	93.7	75	125	1.05	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333902													
WG333902PBS	PBS	11/12/12 9:30				U	%		-0.3	0.3			
WG333902LCSS	LCSS	11/12/12 9:55	PCN41310	4.19		4.3	%		80	120			
L97382-05DUP	DUP	11/12/12 10:47			.5	.5	%				0	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333902													
WG333902PBS	PBS	11/12/12 9:30				U	%		-0.3	0.3			
L97382-05DUP	DUP	11/12/12 10:47			.5	.5	%				0	20	RA ZQ

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334432													
WG334432ICV	ICV	11/20/12 13:59	II120914-3	2		1.939	mg/L	97	90	110			
WG334432ICB	ICB	11/20/12 14:02				U	mg/L		-0.03	0.03			
WG334099PBS	PBS	11/20/12 14:15				U	mg/L		-0.03	0.03			
WG334099LFB	LFB	11/20/12 14:18	II121029-3	.5		.496	mg/L	99.2	85	115			
L97383-01DUP	DUP	11/20/12 14:24			.22	.193	mg/L				13.1	20	
L97383-02MS	MS	11/20/12 14:30	II121029-3	.5	.15	.649	mg/L	99.8	75	125			
L97383-02MSD	MSD	11/20/12 14:33	II121029-3	.5	.15	.613	mg/L	92.6	75	125	5.71	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334022													
WG334022ICV	ICV	11/13/12 14:33	II120914-3	2		1.936	mg/L	96.8	90	110			
WG334022ICB	ICB	11/13/12 14:36				U	mg/L		-0.03	0.03			
WG333921PBS	PBS	11/13/12 14:49				U	mg/Kg		-3	3			
WG333921LCSS	LCSS	11/13/12 14:52	PCN41127	78		80.5	mg/Kg		65.3	90.6			
WG333921LCSSD	LCSSD	11/13/12 14:55	PCN41127	78		80.7	mg/Kg		65.3	90.6	0.2	20	
L97383-09MS	MS	11/13/12 15:31	II121029-3	52	159	196.6	mg/Kg	72.3	75	125			M3
L97383-09MSD	MSD	11/13/12 15:34	II121029-3	52	159	200	mg/Kg	78.8	75	125	1.71	20	

Neutralization Potential as CaCO3 M600/2-78-054 3.2.3 - Modified (No Heat)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334080													
L97383-11DUP	DUP	11/14/12 10:31			.8	.8	%				0	20	RA
WG334080LCSS	LCSS	11/15/12 9:28	PCN33453	100		99	%	99	80	120			
WG334080PBS	PBS	11/15/12 11:00				U	%		-0.1	0.1			
WG334082													
L97383-20DUP	DUP	11/14/12 11:21			6.4	6.5	%				1.6	20	
WG334082LCSS	LCSS	11/15/12 8:38	PCN33453	100		95	%	95	80	120			
WG334082PBS	PBS	11/15/12 10:59				U	%		-0.1	0.1			

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	2.416		2.448	mg/L	101.3	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.06	0.06			
WG334065													
WG334065LFB	LFB	11/13/12 22:12	WI120814-9	2		1.994	mg/Kg	99.7	90	110			
WG333946PBS	PBS	11/13/12 22:13				.12	mg/Kg		-0.3	0.3			
L97380-03AS	AS	11/13/12 22:15	WI120814-9	50	40.6	89.76	mg/Kg	98.3	90	110			
L97383-08DUP	DUP	11/13/12 22:37			17.7	18.12	mg/Kg				2.3	20	

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	.609		.62	mg/L	101.8	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.03	0.03			
WG334065													
WG334065LFB	LFB	11/13/12 22:12	WI120814-9	1		1.002	mg/Kg	100.2	90	110			
WG333946PBS	PBS	11/13/12 22:13				U	mg/Kg		-0.15	0.15			
L97380-03AS	AS	11/13/12 22:15	WI120814-9	25	.7	26.3	mg/Kg	102.4	90	110			
L97383-08DUP	DUP	11/13/12 22:37			.13	.116	mg/Kg				11.4	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334103													
WG334103ICV	ICV	11/14/12 12:02	WI121105-5	1.003		.995	mg/L	99.2	90	110			
WG334103ICB	ICB	11/14/12 12:03				U	mg/L		-0.15	0.15			
WG334114													
WG334114LFB	LFB	11/14/12 13:32	WI111101-3	1		.967	mg/L	96.7	90	110			
WG333946PBS	PBS	11/14/12 13:33				U	mg/Kg		-0.9	0.9			
L97380-03MS	MS	11/14/12 13:35	NH3-WE50X	2500	U	53.3	mg/Kg	106.6	75	125			
L97383-08DUP	DUP	11/14/12 13:55			3	4.8	mg/Kg				46.2	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333403													
WG333403ICV	ICV	11/02/12 11:48	WI121005-1	4		4.03	mg/L	100.8	90	110			
WG333403ICB	ICB	11/02/12 11:49				U	mg/L		-0.3	0.3			
WG333336PBS	PBS	11/02/12 11:50				.00032	%		-0.0006	0.0006			
WG333336LFB	LFB	11/02/12 11:51	WI120814-2	2.5		2.66	%	106.4	85	115			
L97382-08DUP	DUP	11/02/12 12:13			.052	.0426	%				19.9	20	
L97382-07MS	MS	11/02/12 12:25	10XPTSTKN	.0055	.034	.0468	%	232.7	75	125			M3

Ph M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334125													
WG334125ICV	ICV	11/14/12 13:22	PCN38642	4		4.04	units	101	97	103			
L97383-20DUP	DUP	11/14/12 14:52			6.7	6.69	units				0.1	20	

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333994													
WG333994ICV	ICV	11/13/12 9:36	PCN38642	4		3.98	units	99.5	97	103			
L97383-10DUP	DUP	11/13/12 10:57			7.9	7.84	units				0.8	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334022													
WG334022ICV	ICV	11/13/12 14:33	II120914-3	20		19.76	mg/L	98.8	90	110			
WG334022ICB	ICB	11/13/12 14:36				U	mg/L		-0.9	0.9			
WG333921PBS	PBS	11/13/12 14:49				U	mg/Kg		-90	90			
WG333921LCSS	LCSS	11/13/12 14:52	PCN41127	3820		4242	mg/Kg		2810	4830			
WG333921LCSSD	LCSSD	11/13/12 14:55	PCN41127	3820		4353	mg/Kg		2810	4830	2.6	20	
L97383-09MS	MS	11/13/12 15:31	II121029-3	10390.50272	5470	16172	mg/Kg	103	75	125			
L97383-09MSD	MSD	11/13/12 15:34	II121029-3	10390.50272	5470	15995	mg/Kg	101.3	75	125	1.1	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333963													
WG333963PBS	PBS	11/12/12 16:00				U	%		99.9	100.1			
L97383-01DUP	DUP	11/12/12 20:00			92.6	93.04	%				0.5	20	

Sulfur Organic Residual M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333901													
L97383-11DUP	DUP	11/12/12 14:27			U	U	%				0	20	RA

Sulfur Pyritic Sulfide M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333901													
L97383-11DUP	DUP	11/12/12 14:27			.02	.02	%				0	20	RA

Sulfur Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333901													
L97383-11DUP	DUP	11/12/12 14:27			U	U	%				0	20	RA

Sulfur Total M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333901													
WG333901PBS	PBS	11/12/12 10:00				U	%		-0.03	0.03			
WG333901LCSS	LCSS	11/12/12 11:29	PCN41310	4.07		4.34	%	106.6					
L97383-11DUP	DUP	11/12/12 14:27			.02	.02	%				0	20	RA

Total Sulfur Minus Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333901													
L97383-11DUP	DUP	11/12/12 14:27			.02	.02	%				0	20	RA

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-01	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97383-02	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97383-03	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97383-04	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97383-05	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-06	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-07	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-08	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333902	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333403	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97383-09	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97383-10	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-11	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97383-12	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-13	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97383-14	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-15	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97383-16	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-17	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97383-18	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97383-19	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334080	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97383-20	WG334022	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333901	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98
Sulfur HCl Residue	M600/2-78-054 3.2.4-MOD
Sulfur HNO3 Residue	M600/2-78-054 3.2.4-MOD
Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD
Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD
Sulfur Sulfate	M600/2-78-054 3.2.4-MOD
Sulfur Total	M600/2-78-054 3.2.4-MOD
Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L97383
Date Received: 10/16/2012 10:18
Received By: ksj
Date Printed: 10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
2392           14.9           17               Yes
3181           14.4           15               Yes
3638           14.6           15               Yes
3742           15.1           15               Yes
NA16404        14.4           16               Yes
NA16405        13.8           15               Yes
NA16406        14.7           15               Yes
NA16408        14.6           16               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97383

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbom	TKN (see below)	Nitrate/nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-NEREF5 0-6	10/9/12 : 1545	SO	1	X	X	X					
STS-AMD-2012F-NEREF6 0-6	10/9/12 : 1550	SO	1	X	X	X					
STS-AMD-2012F-NEREF7 0-6	10/9/12 : 1600	SO	1	X	X	X					
STS-AMD-2012F-NEREF8 0-6	10/9/12 : 1605	SO	1	X	X	X					
DUP1	10/8/12	SO	1	X	X	X	X	X	X	X	
DUP2	10/9/12	SO	1	X	X	X	X	X	X	X	
DUP3	10/9/12	SO	1	X	X	X	X	X	X	X	
DUP4	10/9/12	SO	1	X	X	X	X	X	X	X	
DUP5	10/9/12	SO	1	X	X	X					
DUP6	10/10/12	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 : 1300	LCD	10.16.12 10:00

L97383 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L97383

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

	SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
✓	STS-PH-2012-FID7	10/11/12 : 1515	SO	1	x	x	x	x				
✓	STS-PH-2012-FID8	10/12/12 : 1040	SO	1	x	x	x	x				
✓	STS-PH-2012-FID10	10/11/12 : 0820	SO	1	x	x	x	x				
✓	STS-PH-2012-FID15	10/11/12 : 1700	SO	1	x	x	x	x				
✓	STS-PH-2012-FID16	10/11/12 : 1745	SO	1	x	x	x	x				
✓	STS-PH-2012-FID17	10/11/12 : 0905	SO	1	x	x	x	x				
✓	STS-PH-2012-FID18	10/12/12 : 0900	SO	1	x	x	x	x				
✓	STS-PH-2012-FID22	10/11/12 : 1345	SO	1	x	x	x	x				
	STS-PH-2012-ERA2	10/10/12 : 1440	SO	1	x	x	x	x				
✓	STS-PH-2012-FID28	10/11/12 : 1110	SO	1	x	x	x	x				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Total Copper - 6010B

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME
	10/12/12 1300		10.16.12 10:00

2

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive   Steamboat Springs, CO 80487   (800) 334-5493

Analytical Report

November 27, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97379

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97379. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97379. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 27, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-W1 0-6

ACZ Sample ID: ***L97379-01***
Date Sampled: *10/08/12 14:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 10:49	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 9:51	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	15200		*	mg/Kg	20	100	11/12/12 17:24	jjc
Copper (1312)	M6010B ICP	0.08		*	mg/L	0.01	0.05	11/26/12 10:31	jjc
Copper, total (3050)	M6010B ICP	1880		*	mg/Kg	1	5	11/12/12 17:24	jjc
Potassium, total (3050)	M6010B ICP	3390			mg/Kg	30	200	11/12/12 17:24	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.9	H	*	%	0.1	0.5	11/08/12 15:08	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/08/12 15:08	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.3		*	%	0.1	0.5	11/01/12 17:48	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:00	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/06/12 11:30	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 13:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:00	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 11:30	mss2
Synthetic Precip. Leaching Procedure	M1312							11/19/12 20:44	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 9:38	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	6.8			mg/Kg	0.1	0.5	11/27/12 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.1		*	mg/Kg	0.1	0.5	11/14/12 22:25	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.28	B	*	mg/Kg	0.05	0.3	11/14/12 22:25	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 12:06	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.127		*	%	0.002	0.01	10/27/12 15:16	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-W2 0-6

ACZ Sample ID: ***L97379-02***
Date Sampled: *10/08/12 15:00*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 11:14	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 10:27	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5510		*	mg/Kg	20	100	11/12/12 17:27	jjc
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	11/26/12 10:40	jjc
Copper, total (3050)	M6010B ICP	1640		*	mg/Kg	1	5	11/12/12 17:27	jjc
Potassium, total (3050)	M6010B ICP	2950			mg/Kg	30	200	11/12/12 17:27	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/08/12 19:17	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/08/12 19:17	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.0		*	%	0.1	0.5	11/01/12 19:25	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:03	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/06/12 15:43	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 14:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:06	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 11:41	mss2
Synthetic Precip. Leaching Procedure	M1312							11/19/12 23:06	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 10:55	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	7.5			mg/Kg	0.5	3	11/27/12 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.5		*	mg/Kg	0.5	3	11/14/12 22:28	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/14/12 22:28	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:17	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.110		*	%	0.002	0.009	10/27/12 15:18	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97379-03***
Project ID:	ZN000001M5	Date Sampled:	*10/08/12 15:20*
Sample ID:	STS-AMD-2012F-W3 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 11:26	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 10:51	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	13700		*	mg/Kg	20	100	11/12/12 17:30	jjc
Copper (1312)	M6010B ICP	0.04	B	*	mg/L	0.01	0.05	11/26/12 10:46	jjc
Copper, total (3050)	M6010B ICP	1300		*	mg/Kg	1	5	11/12/12 17:30	jjc
Potassium, total (3050)	M6010B ICP	2540			mg/Kg	30	200	11/12/12 17:30	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/08/12 21:21	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/08/12 21:21	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	11/01/12 20:14	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:06	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/06/12 19:57	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 14:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:12	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 11:52	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 0:41	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 11:34	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.2			mg/Kg	0.1	0.5	11/27/12 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.3		*	mg/Kg	0.1	0.5	11/14/12 22:30	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.14	B	*	mg/Kg	0.05	0.3	11/14/12 22:30	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:19	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.067		*	%	0.002	0.01	10/27/12 15:19	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-W1@DEPTH

ACZ Sample ID: ***L97379-04***
Date Sampled: *10/08/12 14:40*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 11:38	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 11:03	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	128000		*	mg/Kg	100	500	11/13/12 13:55	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/26/12 10:49	jjc
Copper, total (3050)	M6010B ICP	272		*	mg/Kg	1	5	11/12/12 17:33	jjc
Potassium, total (3050)	M6010B ICP	2260			mg/Kg	30	200	11/12/12 17:33	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	4.8	H	*	%	0.1	0.5	11/08/12 23:25	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/08/12 23:25	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	90.4		*	%	0.1	0.5	11/01/12 21:02	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:09	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/07/12 0:10	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 14:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:18	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 12:03	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 1:29	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 12:12	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.2			mg/Kg	0.1	0.5	11/27/12 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.4		*	mg/Kg	0.1	0.5	11/14/12 22:31	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.17	B	*	mg/Kg	0.05	0.3	11/14/12 22:31	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:20	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.075		*	%	0.002	0.008	10/27/12 15:20	pjb

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-05***
Sample ID:	STS-AMD-2012F-W2@DEPTH	Date Sampled:	*10/08/12 15:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 11:51	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 11:15	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	59600		*	mg/Kg	20	100	11/12/12 17:39	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/26/12 10:52	jjc
Copper, total (3050)	M6010B ICP	244		*	mg/Kg	1	5	11/12/12 17:39	jjc
Potassium, total (3050)	M6010B ICP	3610			mg/Kg	30	200	11/12/12 17:39	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.1	H	*	%	0.1	0.5	11/09/12 1:29	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	11/09/12 1:29	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	94.5		*	%	0.1	0.5	11/01/12 21:51	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:12	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/07/12 4:24	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 15:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:24	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 12:14	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 2:16	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 12:51	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.8			mg/Kg	0.1	0.5	11/27/12 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.9		*	mg/Kg	0.1	0.5	11/14/12 22:32	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.14	B	*	mg/Kg	0.05	0.3	11/14/12 22:32	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 12:13	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.069		*	%	0.002	0.008	10/27/12 15:22	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-06***
Sample ID:	STS-AMD-2012F-W3@DEPTH	Date Sampled:	*10/08/12 15:30*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 12:03	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 11:27	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	67500		*	mg/Kg	20	100	11/12/12 17:42	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/26/12 11:01	jjc
Copper, total (3050)	M6010B ICP	299		*	mg/Kg	1	5	11/12/12 17:42	jjc
Potassium, total (3050)	M6010B ICP	3640			mg/Kg	30	200	11/12/12 17:42	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.1	H	*	%	0.1	0.5	11/09/12 3:34	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/09/12 3:34	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	88.9		*	%	0.1	0.5	11/01/12 22:39	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:15	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/07/12 8:38	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 15:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:30	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 12:25	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 3:51	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 13:29	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.9			mg/Kg	0.1	0.5	11/27/12 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	4.1		*	mg/Kg	0.1	0.5	11/14/12 22:34	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	11/14/12 22:34	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 12:14	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.111		*	%	0.001	0.007	10/27/12 15:25	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-07***
Sample ID:	STS-AMD-2012F-W4 0-6	Date Sampled:	*10/08/12 15:45*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 11:39	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.08		*	mg/L	0.01	0.05	11/26/12 11:04	jjc
Copper, total (3050)	M6010B ICP	1930		*	mg/Kg	1	5	11/12/12 17:51	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	95.7		*	%	0.1	0.5	11/01/12 23:28	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:18	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 15:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:36	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 12:36	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 4:38	mjj

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97379-08***
Project ID:	ZN000001M5	Date Sampled:	*10/08/12 15:55*
Sample ID:	STS-AMD-2012F-W5 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 11:52	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.05		*	mg/L	0.01	0.05	11/26/12 11:07	jjc
Copper, total (3050)	M6010B ICP	1750		*	mg/Kg	1	5	11/12/12 17:54	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.4		*	%	0.1	0.5	11/02/12 0:17	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:22	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 16:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:42	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 12:47	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 5:26	mjj

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5
Sample ID:	STS-AMD-2012F-W6 0-6

ACZ Sample ID:	***L97379-09***
Date Sampled:	*10/08/12 16:00*
Date Received:	*10/16/12*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 12:04	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.01	B	*	mg/L	0.01	0.05	11/26/12 11:10	jjc
Copper, total (3050)	M6010B ICP	510		*	mg/Kg	1	5	11/12/12 17:57	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.2		*	%	0.1	0.5	11/02/12 1:05	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:25	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 16:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:48	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 12:58	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 6:13	mjj

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-10***
Sample ID:	STS-AMD-2012F-W7 0-6	Date Sampled:	*10/08/12 16:05*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 12:16	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.05		*	mg/L	0.01	0.05	11/26/12 11:13	jjc
Copper, total (3050)	M6010B ICP	1940		*	mg/Kg	1	5	11/12/12 18:06	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	97.6		*	%	0.1	0.5	11/02/12 1:54	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:28	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 17:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 9:54	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 13:09	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 7:00	mjj

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-W8 0-6

ACZ Sample ID: ***L97379-11***
Date Sampled: *10/08/12 16:10*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 12:28	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.18		*	mg/L	0.01	0.05	11/26/12 11:16	jjc
Copper, total (3050)	M6010B ICP	3570		*	mg/Kg	1	5	11/12/12 18:09	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	97.4		*	%	0.1	0.5	11/02/12 2:42	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:31	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 17:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:00	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 13:20	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 7:48	mjj

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-12***
Sample ID:	STS-AMD-2012F-E1 0-6	Date Sampled:	*10/10/12 09:40*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 12:15	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 12:40	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4840		*	mg/Kg	20	100	11/12/12 18:12	jjc
Copper (1312)	M6010B ICP	0.10		*	mg/L	0.01	0.05	11/26/12 11:19	jjc
Copper, total (3050)	M6010B ICP	542		*	mg/Kg	1	5	11/12/12 18:12	jjc
Potassium, total (3050)	M6010B ICP	4580			mg/Kg	30	200	11/12/12 18:12	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6	H	*	%	0.1	0.5	11/09/12 5:38	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/12 5:38	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	89.8		*	%	0.1	0.5	11/02/12 3:31	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:34	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/07/12 12:51	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 10:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:06	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 13:31	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 8:35	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 14:08	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	13.1			mg/Kg	0.1	0.5	11/27/12 12:27	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	13.3		*	mg/Kg	0.1	0.5	11/14/12 22:37	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.25	B	*	mg/Kg	0.05	0.3	11/14/12 22:37	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 12:17	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.143		*	%	0.002	0.009	10/27/12 15:26	pjb

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-E2 0-6

ACZ Sample ID: ***L97379-13***
Date Sampled: *10/10/12 10:10*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 12:28	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 12:52	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9080		*	mg/Kg	20	100	11/12/12 18:15	jjc
Copper (1312)	M6010B ICP	0.12		*	mg/L	0.01	0.05	11/26/12 11:25	jjc
Copper, total (3050)	M6010B ICP	468		*	mg/Kg	1	5	11/12/12 18:15	jjc
Potassium, total (3050)	M6010B ICP	5570			mg/Kg	30	200	11/12/12 18:15	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.7	H	*	%	0.1	0.5	11/09/12 7:42	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.0		*	%	0.1	0.5	11/09/12 7:42	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	92.7		*	%	0.1	0.5	11/02/12 4:19	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:37	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/07/12 17:05	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 10:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:12	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 13:42	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 9:23	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 14:47	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	43.5			mg/Kg	0.5	3	11/27/12 12:27	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	44.6		*	mg/Kg	0.5	3	11/14/12 22:38	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.1		*	mg/Kg	0.3	1	11/14/12 22:38	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 12:18	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.292		*	%	0.002	0.01	10/27/12 15:27	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-E3 0-6

ACZ Sample ID: ***L97379-14***
Date Sampled: *10/10/12 10:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 12:40	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 13:04	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6050		*	mg/Kg	20	100	11/12/12 18:18	jjc
Copper (1312)	M6010B ICP	0.36		*	mg/L	0.01	0.05	11/26/12 11:29	jjc
Copper, total (3050)	M6010B ICP	791		*	mg/Kg	1	5	11/12/12 18:18	jjc
Potassium, total (3050)	M6010B ICP	4210			mg/Kg	30	200	11/12/12 18:18	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.6	H	*	%	0.1	0.5	11/09/12 9:47	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.1		*	%	0.1	0.5	11/09/12 9:47	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.1		*	%	0.1	0.5	11/02/12 5:08	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:40	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/07/12 21:19	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 10:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:18	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 13:53	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 10:10	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 15:25	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	27.5			mg/Kg	0.5	3	11/27/12 12:27	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	28.0		*	mg/Kg	0.5	3	11/14/12 22:40	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.5	B	*	mg/Kg	0.3	1	11/14/12 22:40	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 12:20	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.147		*	%	0.002	0.01	10/27/12 15:28	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-E1@DEPTH

ACZ Sample ID: ***L97379-15***
Date Sampled: *10/10/12 09:55*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 12:52	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 13:16	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	28100		*	mg/Kg	20	100	11/12/12 18:28	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/26/12 11:38	jjc
Copper, total (3050)	M6010B ICP	77		*	mg/Kg	1	5	11/12/12 18:28	jjc
Potassium, total (3050)	M6010B ICP	4830			mg/Kg	30	200	11/12/12 18:28	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/09/12 11:51	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/09/12 11:51	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	83.7		*	%	0.1	0.5	11/02/12 5:57	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:44	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 1:32	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 11:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:24	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 14:04	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 10:58	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 16:04	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	13.2			mg/Kg	0.1	0.5	11/27/12 12:27	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	13.5		*	mg/Kg	0.1	0.5	11/14/12 22:41	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.29	B	*	mg/Kg	0.05	0.3	11/14/12 22:41	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	1.5	B	*	mg/Kg	0.3	3	11/14/12 12:21	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.074		*	%	0.002	0.01	10/27/12 15:29	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-E2@DEPTH

ACZ Sample ID: ***L97379-16***
Date Sampled: *10/10/12 10:20*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 13:05	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 13:28	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	24100		*	mg/Kg	20	100	11/12/12 18:31	jjc
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/26/12 11:41	jjc
Copper, total (3050)	M6010B ICP	43		*	mg/Kg	1	5	11/12/12 18:31	jjc
Potassium, total (3050)	M6010B ICP	5600			mg/Kg	30	200	11/12/12 18:31	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/09/12 13:55	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/09/12 13:55	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	82.3		*	%	0.1	0.5	11/02/12 6:45	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:47	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 5:46	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 11:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:30	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 14:15	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 12:32	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 16:42	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	6.9			mg/Kg	0.1	0.5	11/27/12 12:27	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.4		*	mg/Kg	0.1	0.5	11/14/12 22:42	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.48		*	mg/Kg	0.05	0.3	11/14/12 22:42	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	11/14/12 13:21	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.086		*	%	0.002	0.01	10/27/12 15:30	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-17***
Sample ID:	STS-AMD-2012F-E3@DEPTH	Date Sampled:	*10/10/12 10:40*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 13:17	mpb
Total Hot Plate Digestion	M3010A ICP							11/21/12 13:40	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2470		*	mg/Kg	20	100	11/12/12 18:34	jjc
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	11/26/12 11:44	jjc
Copper, total (3050)	M6010B ICP	142		*	mg/Kg	1	5	11/12/12 18:34	jjc
Potassium, total (3050)	M6010B ICP	2870			mg/Kg	30	200	11/12/12 18:34	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.9	H	*	%	0.1	0.5	11/09/12 15:59	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/09/12 15:59	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	92.3		*	%	0.1	0.5	11/02/12 7:34	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:50	mss2
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 9:59	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 11:40	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:36	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 14:26	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 13:20	mjj
Water Extraction	ASA No. 9 10-2.3.2							11/13/12 17:21	nrc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.9	B		mg/Kg	0.5	3	11/27/12 12:28	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.9	B	*	mg/Kg	0.5	3	11/14/12 22:43	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/14/12 22:43	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 12:23	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.061		*	%	0.001	0.006	10/27/12 15:32	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-E4 0-6

ACZ Sample ID: ***L97379-18***
Date Sampled: *10/10/12 11:05*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 13:52	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.26		*	mg/L	0.01	0.05	11/26/12 11:47	jjc
Copper, total (3050)	M6010B ICP	924		*	mg/Kg	1	5	11/12/12 18:37	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	88.4		*	%	0.1	0.5	11/02/12 8:22	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:53	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 12:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:42	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 14:37	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 14:07	mjj

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97379-19***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 10:55*
Sample ID:	STS-AMD-2012F-E5 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 14:04	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.13		*	mg/L	0.01	0.05	11/26/12 11:50	jjc
Copper, total (3050)	M6010B ICP	714		*	mg/Kg	1	5	11/12/12 18:40	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	92.2		*	%	0.1	0.5	11/02/12 9:11	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:56	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 12:20	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:48	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 14:48	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 14:55	mjj

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97379-20***
Sample ID:	STS-AMD-2012F-E6 0-6	Date Sampled:	*10/10/12 10:50*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/21/12 14:17	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.30		*	mg/L	0.01	0.05	11/26/12 11:53	jjc
Copper, total (3050)	M6010B ICP	972		*	mg/Kg	1	5	11/12/12 18:43	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/12/11 9:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	89.1		*	%	0.1	0.5	11/02/12 9:59	mss2

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/12 16:59	mss2
Digestion - Hot Plate	M3050B ICP							11/09/12 18:00	mjj
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 10:54	nrc
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/06/12 14:59	mss2
Synthetic Precip. Leaching Procedure	M1312							11/20/12 15:42	mjj

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333931													
WG333931ICV	ICV	11/12/12 16:59	II120914-3	100		99.01	mg/L	99	90	110			
WG333931ICB	ICB	11/12/12 17:02				U	mg/L		-0.6	0.6			
WG333826PBS	PBS	11/12/12 17:14				U	mg/Kg		-60	60			
WG333826LCSS	LCSS	11/12/12 17:17	PCN41127	6160		5929	mg/Kg		5070	7240			
WG333826LCSSD	LCSSD	11/12/12 17:20	PCN41127	6160		6237	mg/Kg		5070	7240	5.1	20	
L97379-09MS	MS	11/12/12 18:00	II121029-3	6933.50508	11700	16738	mg/Kg	72.7	75	125			M2
L97379-09MSD	MSD	11/12/12 18:03	II121029-3	6933.50508	11700	16228	mg/Kg	65.3	75	125	3.09	20	M2
WG334018													
WG334018ICV	ICV	11/13/12 13:30	II120914-3	100		98.56	mg/L	98.6	90	110			
WG334018ICB	ICB	11/13/12 13:33				U	mg/L		-0.6	0.6			
WG333826PBS	PBS	11/13/12 13:46				U	mg/Kg		-60	60			
WG333826LCSS	LCSS	11/13/12 13:49	PCN41127	6160		5973	mg/Kg		5070	7240			
WG333826LCSSD	LCSSD	11/13/12 13:52	PCN41127	6160		6287	mg/Kg		5070	7240	5.1	20	
L97379-09MS	MS	11/13/12 14:04	II121029-3	6933.50508	11800	16759	mg/Kg	71.5	75	125			M2
L97379-09MSD	MSD	11/13/12 14:07	II121029-3	6933.50508	11800	16371	mg/Kg	65.9	75	125	2.34	20	M2

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333738													
WG333738LCSS	LCSS	11/08/12 13:04	PCN41310	4.19		4.5	%		80	120			
L97379-01DUP	DUP	11/08/12 17:12			1.9	1.9	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333738													
L97379-01DUP	DUP	11/08/12 17:12			1.3	1.4	%				7.4	20	

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334594													
WG334594ICV	ICV	11/26/12 10:09	II120914-3	2		1.9	mg/L	95	90	110			
WG334594ICB	ICB	11/26/12 10:12				U	mg/L		-0.03	0.03			
WG334400PBS	PBS	11/26/12 10:25				U	mg/L		-0.03	0.03			
WG334400LFB	LFB	11/26/12 10:28	II121029-3	.5		.516	mg/L	103.2	85	115			
L97379-01MS	MS	11/26/12 10:34	II121029-3	.5	.08	.596	mg/L	103.2	75	125			
L97379-01MSD	MSD	11/26/12 10:37	II121029-3	.5	.08	.594	mg/L	102.8	75	125	0.34	20	
L97379-02DUP	DUP	11/26/12 10:43			.06	.072	mg/L				18.2	20	RA

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333931													
WG333931ICV	ICV	11/12/12 16:59	II120914-3	2		1.955	mg/L	97.8	90	110			
WG333931ICB	ICB	11/12/12 17:02				U	mg/L		-0.03	0.03			
WG333826PBS	PBS	11/12/12 17:14				U	mg/Kg		-3	3			
WG333826LCSS	LCSS	11/12/12 17:17	PCN41127	78		76.3	mg/Kg		65.3	90.6			
WG333826LCSSD	LCSSD	11/12/12 17:20	PCN41127	78		78.5	mg/Kg		65.3	90.6	2.8	20	
L97379-09MS	MS	11/12/12 18:00	II121029-3	51	510	541.4	mg/Kg	61.6	75	125			M3
L97379-09MSD	MSD	11/12/12 18:03	II121029-3	51	510	601.6	mg/Kg	179.6	75	125	10.53	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334153													
WG334153ICV	ICV	11/14/12 21:05	WI121009-1	2.416		2.455	mg/L	101.6	90	110			
WG334153ICB	ICB	11/14/12 21:06				U	mg/L		-0.06	0.06			
WG334156													
WG334156LFB	LFB	11/14/12 22:23	WI120814-9	2		1.974	mg/Kg	98.7	90	110			
WG334032PBS	PBS	11/14/12 22:24				U	mg/Kg		-0.3	0.3			
L97379-01DUP	DUP	11/14/12 22:27			7.1	6.73	mg/Kg				5.4	20	
L97379-02AS	AS	11/14/12 22:29	WI120814-9	50	7.5	56.65	mg/Kg	98.3	90	110			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334153													
WG334153ICV	ICV	11/14/12 21:05	WI121009-1	.609		.636	mg/L	104.4	90	110			
WG334153ICB	ICB	11/14/12 21:06				U	mg/L		-0.03	0.03			
WG334156													
WG334156LFB	LFB	11/14/12 22:23	WI120814-9	1		1.046	mg/Kg	104.6	90	110			
WG334032PBS	PBS	11/14/12 22:24				U	mg/Kg		-0.15	0.15			
L97379-01DUP	DUP	11/14/12 22:27			.28	.251	mg/Kg				10.9	20	RA
L97379-02AS	AS	11/14/12 22:29	WI120814-9	25	U	26.66	mg/Kg	106.6	90	110			

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334103													
WG334103ICV	ICV	11/14/12 12:02	WI121105-5	1.003		.995	mg/L	99.2	90	110			
WG334103ICB	ICB	11/14/12 12:03				U	mg/L		-0.15	0.15			
WG334103LFB	LFB	11/14/12 12:04	WI111101-3	1		.997	mg/L	99.7	90	110			
WG334032PBS	PBS	11/14/12 12:05				U	mg/Kg		-0.9	0.9			
L97379-01DUP	DUP	11/14/12 12:07			U	U	mg/Kg				0	20	RA
L97379-02MS	MS	11/14/12 13:18	NH3-WE50X	2500	U	53.1	mg/Kg	106.2	75	125			

Nitrogen, total Kjeldahl

M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333039													
WG333039ICV	ICV	10/27/12 15:09	WI121005-1	4		3.9	mg/L	97.5	90	110			
WG333039ICB	ICB	10/27/12 15:10				.19	mg/L		-0.3	0.3			
WG332786PBS1	PBS	10/27/12 15:11				.0036	%		-0.006	0.006			
WG332786LFB1	LFB	10/27/12 15:13	WI120814-2	2.5		2.72	%	108.8	85	115			
L97379-01DUP	DUP	10/27/12 15:17			.127	.1256	%				1.1	20	
L97380-08MS	MS	10/27/12 15:41	WI120814-2	.035	.105	.1317	%	76.3	75	125			
WG332786PBS2	PBS	10/27/12 15:43				.0025	%		-0.006	0.006			
WG332786LFB2	LFB	10/27/12 15:44	WI120814-2	2.5		2.73	%	109.2	85	115			
L97380-14DUP	DUP	10/27/12 15:45			.146	.1153	%				23.5	20	RD
L97208-01MS	MS	10/27/12 15:59	5XPTSTKN	.364	5.88	6.43	%	151.1	75	125			M3

pH, Saturated Paste

USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333942													
L97379-20DUP	DUP	11/12/11 9:00			7.6	7.6	units				0	20	
WG333942ICV	ICV	11/12/11 9:00	PCN38642	4		4.04	units	101	97	103			

Potassium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333931													
WG333931ICV	ICV	11/12/12 16:59	II120914-3	20		19.89	mg/L	99.5	90	110			
WG333931ICB	ICB	11/12/12 17:02				U	mg/L		-0.9	0.9			
WG333826PBS	PBS	11/12/12 17:14				U	mg/Kg		-90	90			
WG333826LCSS	LCSS	11/12/12 17:17	PCN41127	3820		3944	mg/Kg		2810	4830			
WG333826LCSSD	LCSSD	11/12/12 17:20	PCN41127	3820		4148	mg/Kg		2810	4830	5	20	
L97379-09MS	MS	11/12/12 18:00	II121029-3	10190.68536	3090	13556	mg/Kg	102.7	75	125			
L97379-09MSD	MSD	11/12/12 18:03	II121029-3	10190.68536	3090	13576	mg/Kg	102.9	75	125	0.15	20	

Solids, Percent

CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333366													
WG333366PBS	PBS	11/01/12 17:00				U	%		99.9	100.1			
L97379-01DUP	DUP	11/01/12 18:37			96.3	96.36	%				0.1	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-01	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-02	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-03	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-04	WG334018	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-05	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-06	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97379-07	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97379-08	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-09	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97379-10	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97379-11	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-12	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-13	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-14	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-15	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-16	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-17	WG333931	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333738	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334156	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334103	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L97379-18	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97379-19	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97379-20	WG334594	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG333931	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID:	L97379
Date Received:	10/16/2012 10:14
Received By:	ksj
Date Printed:	10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
3181           14.4           15               Yes
3742           15.1           15               Yes
NA16401        14.6           17               Yes
NA16402        14.8           17               Yes
NA16403        14.7           16               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97379

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L97379 Chain of Custody

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-W1 0-6	10/8/12 : 1430	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-W2 0-6	10/8/12 : 1500	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-W3 0-6	10/8/12 : 1520	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-W1@depth	10/8/12 : 1440	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-W2@depth	10/8/12 : 1510	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-W3@depth	10/8/12 : 1530	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-W4 0-6	10/8/12 : 1545	SO	1	x	x	x					
STS-AMD-2012F-W5 0-6	10/8/12 : 1555	SO	1	x	x	x					
STS-AMD-2012F-W6 0-6	10/8/12 : 1600	SO	1	x	x	x					
STS-AMD-2012F-W7 0-6	10/8/12 : 1605	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 - 1300		10.16.12 10:00

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L97379

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS
E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com
Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-W8 0-6	10/8/12 : 1610	SO	1	x	x	x					
STS-AMD-2012F-E1 0-6	10/10/12 : 0940	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-E2 0-6	10/10/12 : 1010	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-E3 0-6	10/10/12 : 1030	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-E1@depth	10/10/12 : 0955	SO	1	x	x	x	x	x	x	x	@depth > 1.0-1.5
STS-AMD-2012F-E2@depth	10/10/12 : 1020	SO	1	x	x	x	x	x	x	x	@depth > 1.0-1.5
STS-AMD-2012F-E3@depth	10/10/12 : 1040	SO	1	x	x	x	x	x	x	x	@depth > 1.0-1.5
STS-AMD-2012F-E4 0-6	10/10/12 : 1105	SO	1	x	x	x					
STS-AMD-2012F-E5 0-6	10/10/12 : 1055	SO	1	x	x	x					
STS-AMD-2012F-E6 0-6	10/10/12 : 1050	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM 4500 (organic), Nitrate/Nitrite 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 :1300	LZB	10.16.12 10:00

2

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 27, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97380

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97380. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97380. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 27, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97380-01***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 11:10*
Sample ID:	STS-AMD-2012F-E7 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 8:53	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.21			mg/L	0.01	0.05	11/26/12 17:12	aeb
Copper, total (3050)	M6010B ICP	417		*	mg/Kg	1	5	11/12/12 11:47	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/13/12 8:52	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.1		*	%	0.1	0.5	11/12/12 17:02	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/02/12 15:00	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 11:56	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:00	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 15:50	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97380-02***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 11:00*
Sample ID:	STS-AMD-2012F-E8 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 9:17	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.14			mg/L	0.01	0.05	11/26/12 17:18	aeb
Copper, total (3050)	M6010B ICP	791		*	mg/Kg	1	5	11/12/12 11:50	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	11/13/12 8:57	mss2
Solids, Percent	CLPSOW390, PART F, D-98	88.2		*	%	0.1	0.5	11/12/12 21:08	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/02/12 16:55	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 12:55	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:06	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:07	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 17:27	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-03***
Sample ID:	STS-AMD-2012F-N1 0-6	Date Sampled:	*10/09/12 07:40*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 13:29	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 9:53	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8150		*	mg/Kg	20	100	11/12/12 11:53	jjc
Copper (1312)	M6010B ICP	0.35			mg/L	0.01	0.05	11/26/12 17:27	aeb
Copper, total (3050)	M6010B ICP	1590		*	mg/Kg	1	5	11/12/12 11:53	jjc
Potassium, total (3050)	M6010B ICP	3740		*	mg/Kg	30	200	11/12/12 11:53	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.5	H	*	%	0.1	0.5	11/08/12 15:08	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.1		*	%	0.1	0.5	11/08/12 15:08	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.0		*	units	0.1	0.1	11/13/12 9:03	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.9		*	%	0.1	0.5	11/12/12 23:11	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/02/12 18:51	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 11:00	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 13:54	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:12	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:15	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 19:52	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 15:28	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	39.9			mg/Kg	0.5	3	11/27/12 12:50	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	40.6		*	mg/Kg	0.5	3	11/13/12 22:14	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.7	B	*	mg/Kg	0.3	1	11/13/12 22:14	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:34	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.283		*	%	0.002	0.009	10/27/12 15:33	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-04***
Sample ID:	STS-AMD-2012F-N2 0-6	Date Sampled:	*10/09/12 08:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 13:42	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 10:04	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7760		*	mg/Kg	20	100	11/12/12 11:56	jjc
Copper (1312)	M6010B ICP	0.36			mg/L	0.01	0.05	11/26/12 17:31	aeb
Copper, total (3050)	M6010B ICP	1680		*	mg/Kg	1	5	11/12/12 11:56	jjc
Potassium, total (3050)	M6010B ICP	4020		*	mg/Kg	30	200	11/12/12 11:56	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.9	H	*	%	0.1	0.5	11/08/12 19:17	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.4		*	%	0.1	0.5	11/08/12 19:17	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.0		*	units	0.1	0.1	11/13/12 9:08	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.7		*	%	0.1	0.5	11/13/12 1:14	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/02/12 20:47	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 11:13	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 14:52	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:18	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:23	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 20:40	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 15:56	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	53.6			mg/Kg	0.5	3	11/27/12 12:50	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	54.5		*	mg/Kg	0.5	3	11/13/12 22:16	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.9	B	*	mg/Kg	0.3	1	11/13/12 22:16	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 13:36	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.235		*	%	0.002	0.009	10/27/12 15:34	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97380-05***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 08:35*
Sample ID:	STS-AMD-2012F-N3 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:22	tcd
Total Hot Plate Digestion	M3010A ICP							11/26/12 10:16	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8610		*	mg/Kg	20	100	11/12/12 12:05	jjc
Copper (1312)	M6010B ICP	0.23			mg/L	0.01	0.05	11/26/12 17:34	aeb
Copper, total (3050)	M6010B ICP	991		*	mg/Kg	1	5	11/12/12 12:05	jjc
Potassium, total (3050)	M6010B ICP	3020		*	mg/Kg	30	200	11/12/12 12:05	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/08/12 21:21	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	11/08/12 21:21	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	11/13/12 9:14	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.5		*	%	0.1	0.5	11/13/12 3:17	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/02/12 22:43	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 11:27	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 17:49	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:24	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:31	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 21:28	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 16:24	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	7.0			mg/Kg	0.5	3	11/27/12 12:50	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.4		*	mg/Kg	0.5	3	11/13/12 22:18	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.4	B	*	mg/Kg	0.3	1	11/13/12 22:18	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 13:37	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.087		*	%	0.002	0.008	10/30/12 13:52	tcd

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-N1@DEPTH

ACZ Sample ID: ***L97380-06***
Date Sampled: *10/09/12 07:55*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 13:54	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 10:28	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8440		*	mg/Kg	20	100	11/12/12 12:17	jjc
Copper (1312)	M6010B ICP	0.02	B		mg/L	0.01	0.05	11/26/12 17:43	aeb
Copper, total (3050)	M6010B ICP	423		*	mg/Kg	1	5	11/12/12 12:17	jjc
Potassium, total (3050)	M6010B ICP	3100		*	mg/Kg	30	200	11/12/12 12:17	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6	H	*	%	0.1	0.5	11/08/12 23:25	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/08/12 23:25	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	11/13/12 9:19	mss2
Solids, Percent	CLPSOW390, PART F, D-98	88.2		*	%	0.1	0.5	11/13/12 5:19	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 0:39	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 11:40	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 18:48	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:30	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:39	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 23:05	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 16:52	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	24.2			mg/Kg	0.3	2	11/27/12 12:50	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	24.5		*	mg/Kg	0.3	2	11/13/12 22:40	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.32		*	mg/Kg	0.05	0.3	11/13/12 22:19	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 13:39	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.117		*	%	0.002	0.009	10/27/12 15:35	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97380-07***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 08:25*
Sample ID:	STS-AMD-2012F-N2@DEPTH	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 14:07	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 10:40	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8760		*	mg/Kg	20	100	11/12/12 12:20	jjc
Copper (1312)	M6010B ICP	0.02	B		mg/L	0.01	0.05	11/26/12 17:46	aeb
Copper, total (3050)	M6010B ICP	263		*	mg/Kg	1	5	11/12/12 12:20	jjc
Potassium, total (3050)	M6010B ICP	2960		*	mg/Kg	30	200	11/12/12 12:20	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6	H	*	%	0.1	0.5	11/09/12 1:29	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/12 1:29	mss2
pH, Saturated Paste	USDA No. 60 (21A)	6.9		*	units	0.1	0.1	11/13/12 9:25	mss2
Solids, Percent	CLPSOW390, PART F, D-98	86.7		*	%	0.1	0.5	11/13/12 7:22	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 2:34	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 11:54	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 19:46	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:36	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:47	jjc
Synthetic Precip. Leaching Procedure	M1312							11/20/12 23:54	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 17:21	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	41.6			mg/Kg	0.5	3	11/27/12 12:51	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	41.8		*	mg/Kg	0.5	3	11/13/12 22:41	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.16	B	*	mg/Kg	0.05	0.3	11/13/12 22:20	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.8	B	*	mg/Kg	0.3	3	11/14/12 13:40	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.127		*	%	0.002	0.01	10/27/12 15:38	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-N3@DEPTH

ACZ Sample ID: ***L97380-08***
Date Sampled: *10/09/12 08:50*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 14:19	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 10:52	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9870		*	mg/Kg	20	100	11/12/12 12:23	jjc
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	11/26/12 17:49	aeb
Copper, total (3050)	M6010B ICP	122		*	mg/Kg	1	5	11/12/12 12:23	jjc
Potassium, total (3050)	M6010B ICP	1950		*	mg/Kg	30	200	11/12/12 12:23	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2	H	*	%	0.1	0.5	11/09/12 3:34	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	11/09/12 3:34	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/13/12 9:31	mss2
Solids, Percent	CLPSOW390, PART F, D-98	87.2		*	%	0.1	0.5	11/13/12 9:25	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 4:30	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 12:08	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 20:45	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:42	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 11:55	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 0:42	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 17:49	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.5			mg/Kg	0.1	0.5	11/27/12 12:51	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	8.7		*	mg/Kg	0.1	0.5	11/13/12 22:21	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.23	B	*	mg/Kg	0.05	0.3	11/13/12 22:21	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:41	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.105		*	%	0.001	0.007	10/27/12 15:40	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-09***
Sample ID:	STS-AMD-2012F-N4 0-6	Date Sampled:	*10/09/12 08:55*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 11:04	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.04	B		mg/L	0.01	0.05	11/26/12 17:52	aeb
Copper, total (3050)	M6010B ICP	378		*	mg/Kg	1	5	11/12/12 12:26	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/13/12 9:36	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.8		*	%	0.1	0.5	11/13/12 11:28	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 6:26	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 21:44	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:48	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:03	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 1:30	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97380-10***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 09:00*
Sample ID:	STS-AMD-2012F-N5 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 11:16	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.24			mg/L	0.01	0.05	11/26/12 17:59	aeb
Copper, total (3050)	M6010B ICP	1030		*	mg/Kg	1	5	11/12/12 12:30	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/13/12 9:42	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.0		*	%	0.1	0.5	11/13/12 13:31	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 8:22	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 22:43	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:54	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:11	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 2:19	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97380-11***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 09:05*
Sample ID:	STS-AMD-2012F-N6 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 11:28	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.17			mg/L	0.01	0.05	11/26/12 18:02	aeb
Copper, total (3050)	M6010B ICP	1250		*	mg/Kg	1	5	11/12/12 12:33	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	11/13/12 9:53	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.5		*	%	0.1	0.5	11/13/12 15:34	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 10:18	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 23:42	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:19	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 3:07	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-12***
Sample ID:	STS-AMD-2012F-N7 0-6	Date Sampled:	*10/09/12 09:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 11:39	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.80			mg/L	0.01	0.05	11/26/12 18:05	aeb
Copper, total (3050)	M6010B ICP	1710		*	mg/Kg	1	5	11/12/12 12:36	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	11/13/12 9:58	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.0		*	%	0.1	0.5	11/13/12 17:37	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 12:13	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 0:40	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:06	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:26	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 3:56	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-13***
Sample ID:	STS-AMD-2012F-N8 0-6	Date Sampled:	*10/09/12 09:15*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 11:51	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.09			mg/L	0.01	0.05	11/26/12 18:08	aeb
Copper, total (3050)	M6010B ICP	460		*	mg/Kg	1	5	11/12/12 12:39	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/13/12 10:04	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.9		*	%	0.1	0.5	11/13/12 19:39	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 14:09	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 1:39	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:12	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:34	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 4:44	cdb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-14***
Sample ID:	STS-AMD-2012F-NE1 0-6	Date Sampled:	*10/09/12 16:20*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 14:44	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 12:03	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5280		*	mg/Kg	20	100	11/12/12 12:42	jjc
Copper (1312)	M6010B ICP	1.43			mg/L	0.01	0.05	11/26/12 18:11	aeb
Copper, total (3050)	M6010B ICP	3750		*	mg/Kg	1	5	11/12/12 12:42	jjc
Potassium, total (3050)	M6010B ICP	3100		*	mg/Kg	30	200	11/12/12 12:42	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.7	H	*	%	0.1	0.5	11/09/12 5:38	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	11/09/12 5:38	mss2
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	11/13/12 10:09	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.6		*	%	0.1	0.5	11/13/12 21:42	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 16:05	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 12:21	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 2:38	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:18	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:42	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 5:32	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 18:17	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	26.9			mg/Kg	0.3	2	11/27/12 12:51	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	26.9		*	mg/Kg	0.3	2	11/13/12 22:42	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.05	0.3	11/13/12 22:22	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	9.4		*	mg/Kg	0.3	3	11/14/12 13:42	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.146		*	%	0.001	0.006	10/27/12 15:42	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-15***
Sample ID:	STS-AMD-2012F-NE2 0-6	Date Sampled:	*10/09/12 17:20*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 15:33	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 12:15	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4420		*	mg/Kg	20	100	11/12/12 12:51	jjc
Copper (1312)	M6010B ICP	0.37			mg/L	0.01	0.05	11/26/12 18:20	aeb
Copper, total (3050)	M6010B ICP	3370		*	mg/Kg	1	5	11/12/12 12:51	jjc
Potassium, total (3050)	M6010B ICP	2990		*	mg/Kg	30	200	11/12/12 12:51	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.9	H	*	%	0.1	0.5	11/09/12 7:42	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	11/09/12 7:42	mss2
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	11/13/12 10:15	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.8		*	%	0.1	0.5	11/13/12 23:45	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 18:01	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 12:35	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 3:37	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:24	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:50	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 6:21	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 18:45	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	6.6			mg/Kg	0.5	3	11/27/12 12:51	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.0		*	mg/Kg	0.5	3	11/13/12 22:26	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.4	B	*	mg/Kg	0.3	1	11/13/12 22:26	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:45	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.188		*	%	0.002	0.009	10/27/12 15:46	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-NE3 0-6

ACZ Sample ID: ***L97380-16***
Date Sampled: *10/09/12 16:50*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 15:45	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 12:27	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6530		*	mg/Kg	20	100	11/12/12 12:54	jjc
Copper (1312)	M6010B ICP	0.07			mg/L	0.01	0.05	11/26/12 18:23	aeb
Copper, total (3050)	M6010B ICP	1110		*	mg/Kg	1	5	11/12/12 12:54	jjc
Potassium, total (3050)	M6010B ICP	4360		*	mg/Kg	30	200	11/12/12 12:54	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.8	H	*	%	0.1	0.5	11/09/12 9:47	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.5		*	%	0.1	0.5	11/09/12 9:47	mss2
pH, Saturated Paste	USDA No. 60 (21A)	6.5		*	units	0.1	0.1	11/13/12 10:21	mss2
Solids, Percent	CLPSOW390, PART F, D-98	91.7		*	%	0.1	0.5	11/14/12 1:48	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 19:57	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 12:49	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 4:36	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:30	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 12:58	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 7:57	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 19:14	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.9			mg/Kg	0.5	3	11/27/12 12:51	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.9		*	mg/Kg	0.5	3	11/13/12 22:27	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/13/12 22:27	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	4	B	*	mg/Kg	3	30	11/14/12 13:46	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.159		*	%	0.001	0.006	10/27/12 15:47	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-17***
Sample ID:	STS-AMD-2012F-NE1@DEPTH	Date Sampled:	*10/09/12 16:35*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 15:58	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 12:39	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6240		*	mg/Kg	20	100	11/12/12 12:57	jjc
Copper (1312)	M6010B ICP	0.03	B		mg/L	0.01	0.05	11/26/12 18:26	aeb
Copper, total (3050)	M6010B ICP	2190		*	mg/Kg	1	5	11/12/12 12:57	jjc
Potassium, total (3050)	M6010B ICP	3490		*	mg/Kg	30	200	11/12/12 12:57	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.7	H	*	%	0.1	0.5	11/09/12 11:51	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	11/09/12 11:51	mss2
pH, Saturated Paste	USDA No. 60 (21A)	6.0		*	units	0.1	0.1	11/13/12 10:26	mss2
Solids, Percent	CLPSOW390, PART F, D-98	87.2		*	%	0.1	0.5	11/14/12 3:51	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 21:53	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 13:02	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 5:34	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:36	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 13:06	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 8:46	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 19:42	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	5.6			mg/Kg	0.1	0.5	11/27/12 12:52	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.7		*	mg/Kg	0.1	0.5	11/13/12 22:28	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.06	B	*	mg/Kg	0.05	0.3	11/13/12 22:28	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	1.1	B	*	mg/Kg	0.3	3	11/14/12 13:47	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.142		*	%	0.001	0.007	10/27/12 15:49	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-18***
Sample ID:	STS-AMD-2012F-NE2@DEPTH	Date Sampled:	*10/09/12 17:35*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 16:10	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 12:51	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10600		*	mg/Kg	20	100	11/12/12 13:00	jjc
Copper (1312)	M6010B ICP		U		mg/L	0.01	0.05	11/26/12 18:30	aeb
Copper, total (3050)	M6010B ICP	256		*	mg/Kg	1	5	11/12/12 13:00	jjc
Potassium, total (3050)	M6010B ICP	3350		*	mg/Kg	30	200	11/12/12 13:00	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2	H	*	%	0.1	0.5	11/09/12 13:55	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/09/12 13:55	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/13/12 10:32	mss2
Solids, Percent	CLPSOW390, PART F, D-98	82.5		*	%	0.1	0.5	11/14/12 5:54	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/03/12 23:48	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 13:16	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 6:33	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:42	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 13:14	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 9:34	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 20:10	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3			mg/Kg	0.1	0.5	11/27/12 12:52	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.2		*	mg/Kg	0.1	0.5	11/13/12 22:29	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	11/13/12 22:29	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.9	B	*	mg/Kg	0.3	3	11/14/12 13:49	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.092		*	%	0.002	0.008	10/27/12 15:52	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-NE3@DEPTH

ACZ Sample ID: ***L97380-19***
Date Sampled: *10/09/12 17:00*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 16:22	mpb
Total Hot Plate Digestion	M3010A ICP							11/26/12 13:02	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8050		*	mg/Kg	20	100	11/12/12 13:03	jjc
Copper (1312)	M6010B ICP	0.01	B		mg/L	0.01	0.05	11/26/12 18:33	aeb
Copper, total (3050)	M6010B ICP	312		*	mg/Kg	1	5	11/12/12 13:03	jjc
Potassium, total (3050)	M6010B ICP	4740		*	mg/Kg	30	200	11/12/12 13:03	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0	H	*	%	0.1	0.5	11/09/12 15:59	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/09/12 15:59	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/13/12 10:37	mss2
Solids, Percent	CLPSOW390, PART F, D-98	81.3		*	%	0.1	0.5	11/14/12 7:57	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 1:44	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 13:29	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 7:32	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:48	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 13:22	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 10:23	cdb
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 20:38	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.5			mg/Kg	0.1	0.5	11/27/12 12:52	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.7		*	mg/Kg	0.1	0.5	11/13/12 22:31	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.18	B	*	mg/Kg	0.05	0.3	11/13/12 22:31	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 13:50	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.080		*	%	0.002	0.01	10/27/12 15:53	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97380-20***
Sample ID:	STS-AMD-2012F-NE4 0-6	Date Sampled:	*10/09/12 17:55*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/26/12 13:14	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.09			mg/L	0.01	0.05	11/26/12 18:36	aeb
Copper, total (3050)	M6010B ICP	1770		*	mg/Kg	1	5	11/12/12 13:06	jjc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	11/13/12 10:43	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.6		*	%	0.1	0.5	11/14/12 9:59	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 3:40	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 8:31	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:54	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 13:30	jjc
Synthetic Precip. Leaching Procedure	M1312							11/21/12 11:11	cdb

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company ACZ Project ID: ***L97380***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333916													
WG333916ICV	ICV	11/12/12 11:22	II120914-3	100		98.23	mg/L	98.2	90	110			
WG333916ICB	ICB	11/12/12 11:25				U	mg/L		-0.6	0.6			
WG333815PBS	PBS	11/12/12 11:38				U	mg/Kg		-60	60			
WG333815LCSS	LCSS	11/12/12 11:41	PCN41127	6160		6140	mg/Kg		5070	7240			
WG333815LCSSD	LCSSD	11/12/12 11:44	PCN41127	6160		5949	mg/Kg		5070	7240	3.2	20	
L97380-04MS	MS	11/12/12 11:59	II121029-3	6865.52954	7760	15322	mg/Kg	110.1	75	125			
L97380-04MSD	MSD	11/12/12 12:02	II121029-3	6865.52954	7760	14332	mg/Kg	95.7	75	125	6.68	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333742													
WG333742LCSS	LCSS	11/08/12 13:04	PCN41310	4.19		4.5	%		80	120			
L97380-03DUP	DUP	11/08/12 17:12			2.5	2.5	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333742													
L97380-03DUP	DUP	11/08/12 17:12			2.1	2.1	%				0	20	

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334660													
WG334660ICV	ICV	11/26/12 16:50	II120914-3	2		1.919	mg/L	96	90	110			
WG334660ICB	ICB	11/26/12 16:53				U	mg/L		-0.03	0.03			
WG334459PBS	PBS	11/26/12 17:06				U	mg/L		-0.03	0.03			
WG334459LFB	LFB	11/26/12 17:09	II121029-3	.5		.509	mg/L	101.8	85	115			
L97380-01DUP	DUP	11/26/12 17:15			.21	.2	mg/L				4.9	20	
L97380-02MS	MS	11/26/12 17:21	II121029-3	.5	.14	.649	mg/L	101.8	75	125			
L97380-02MSD	MSD	11/26/12 17:24	II121029-3	.5	.14	.648	mg/L	101.6	75	125	0.15	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333916													
WG333916ICV	ICV	11/12/12 11:22	II120914-3	2		1.942	mg/L	97.1	90	110			
WG333916ICB	ICB	11/12/12 11:25				U	mg/L		-0.03	0.03			
WG333815PBS	PBS	11/12/12 11:38				U	mg/Kg		-3	3			
WG333815LCSS	LCSS	11/12/12 11:41	PCN41127	78		76.5	mg/Kg		65.3	90.6			
WG333815LCSSD	LCSSD	11/12/12 11:44	PCN41127	78		77.5	mg/Kg		65.3	90.6	1.3	20	
L97380-04MS	MS	11/12/12 11:59	II121029-3	50.5	1680	1628.1	mg/Kg	-102.8	75	125			M3
L97380-04MSD	MSD	11/12/12 12:02	II121029-3	50.5	1680	1692.8	mg/Kg	25.3	75	125	3.9	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	2.416		2.448	mg/L	101.3	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.06	0.06			
WG334065													
WG334065LFB	LFB	11/13/12 22:12	WI120814-9	2		1.994	mg/Kg	99.7	90	110			
WG333946PBS	PBS	11/13/12 22:13				.12	mg/Kg		-0.3	0.3			
L97380-03AS	AS	11/13/12 22:15	WI120814-9	50	40.6	89.76	mg/Kg	98.3	90	110			
L97383-08DUP	DUP	11/13/12 22:37			17.7	18.12	mg/Kg				2.3	20	

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	.609		.62	mg/L	101.8	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.03	0.03			
WG334065													
WG334065LFB	LFB	11/13/12 22:12	WI120814-9	1		1.002	mg/Kg	100.2	90	110			
WG333946PBS	PBS	11/13/12 22:13				U	mg/Kg		-0.15	0.15			
L97380-03AS	AS	11/13/12 22:15	WI120814-9	25	.7	26.3	mg/Kg	102.4	90	110			
L97383-08DUP	DUP	11/13/12 22:37			.13	.116	mg/Kg				11.4	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334103													
WG334103ICV	ICV	11/14/12 12:02	WI121105-5	1.003		.995	mg/L	99.2	90	110			
WG334103ICB	ICB	11/14/12 12:03				U	mg/L		-0.15	0.15			
WG334114													
WG334114LFB	LFB	11/14/12 13:32	WI111101-3	1		.967	mg/L	96.7	90	110			
WG333946PBS	PBS	11/14/12 13:33				U	mg/Kg		-0.9	0.9			
L97380-03MS	MS	11/14/12 13:35	NH3-WE50X	2500	U	53.3	mg/Kg	106.6	75	125			
L97383-08DUP	DUP	11/14/12 13:55			3	4.8	mg/Kg				46.2	20	RA

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L97380***

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333039													
WG333039ICV	ICV	10/27/12 15:09	WI121005-1	4		3.9	mg/L	97.5	90	110			
WG333039ICB	ICB	10/27/12 15:10				.19	mg/L		-0.3	0.3			
WG332786PBS1	PBS	10/27/12 15:11				.0036	%		-0.006	0.006			
WG332786LFB1	LFB	10/27/12 15:13	WI120814-2	2.5		2.72	%	108.8	85	115			
L97380-08MS	MS	10/27/12 15:41	WI120814-2	.035	.105	.1317	%	76.3	75	125			
WG332786PBS2	PBS	10/27/12 15:43				.0025	%		-0.006	0.006			
WG332786LFB2	LFB	10/27/12 15:44	WI120814-2	2.5		2.73	%	109.2	85	115			
L97380-14DUP	DUP	10/27/12 15:45			.146	.1153	%				23.5	20	RD
WG333155													
WG333155ICV	ICV	10/30/12 12:55	WI121005-1	4		3.96	mg/L	99	90	110			
WG333155ICB	ICB	10/30/12 12:57				.11	mg/L		-0.3	0.3			
WG333157													
WG333088PBS	PBS	10/30/12 13:45				U	%		-0.006	0.006			
WG333088LFB	LFB	10/30/12 13:46	WI120814-2	2.5		2.65	%	106	85	115			
L97307-01MS	MS	10/30/12 13:49	WI120814-2	.045	.011	.059	%	106.7	75	125			
L97307-02DUP	DUP	10/30/12 14:14			.466	.4055	%				13.9	20	

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333991													
WG333991ICV	ICV	11/13/12 8:46	PCN38642	4		4.01	units	100.3	97	103			
L97380-20DUP	DUP	11/13/12 10:54			5.9	5.91	units				0.2	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333916													
WG333916ICV	ICV	11/12/12 11:22	II120914-3	20		19.79	mg/L	99	90	110			
WG333916ICB	ICB	11/12/12 11:25				U	mg/L		-0.9	0.9			
WG333815PBS	PBS	11/12/12 11:38				U	mg/Kg		-90	90			
WG333815LCSS	LCSS	11/12/12 11:41	PCN41127	3820		3914	mg/Kg		2810	4830			
WG333815LCSSD	LCSSD	11/12/12 11:44	PCN41127	3820		3968	mg/Kg		2810	4830	1.4	20	
L97380-04MS	MS	11/12/12 11:59	II121029-3	10090.77668	4020	13776	mg/Kg	96.7	75	125			
L97380-04MSD	MSD	11/12/12 12:02	II121029-3	10090.77668	4020	13857	mg/Kg	97.5	75	125	0.59	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333956													
WG333956PBS	PBS	11/12/12 15:00				U	%		99.9	100.1			
L97380-01DUP	DUP	11/12/12 19:05			92.1	91.66	%				0.5	20	

Inorganic Extended Qualifier Report

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L97380***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-01	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L97380-02	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L97380-03	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-04	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-05	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-06	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-07	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-08	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L97380-09	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L97380-10	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L97380-11	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L97380-12	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-13	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L97380-14	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-15	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-16	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-17	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-18	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97380-19	WG333916	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Potassium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG333742	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334065	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334114	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L97380-20	WG333916	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L97380
Date Received: 10/16/2012 10:17
Received By: ksj
Date Printed: 10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
3181           14.4           15               Yes
3638           14.6           15               Yes
3673           14.6           16               Yes
NA16402        14.8           17               Yes
NA16403        14.7           16               Yes
NA16408        14.6           16               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97380

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-E7 0-6	10/10/12: 1110	SO	1	x	x	x					
STS-AMD-2012F-E8 0-6	10/10/12: 1100	SO	1	x	x	x					
STS-AMD-2012F-N1 0-6	10/9/12: 0740	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-N2 0-6	10/9/12: 0810	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-N3 0-6	10/9/12: 0835	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-N1 @depth	10/9/12: 0755	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-N2@depth	10/9/12: 0825	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-N3@depth	10/9/12: 0850	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-N4 0-6	10/9/12: 0855	SO	1	x	x	x					
STS-AMD-2012F-N5 0-6	10/9/12: 0900	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12: 1300		10.16.12 10:00

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

L97380 Chain of Custody

ACZ Laboratories, Inc. L97380

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carobn	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-N6 0-6	10/9/12: 0905	SO	1	x	x	x					
STS-AMD-2012F-N7 0-6	10/9/12: 0910	SO	1	x	x	x					
STS-AMD-2012F-N8 0-6	10/9/12: 0915	SO	1	x	x	x					
STS-AMD-2012F-NE1 0-6	10/9/12: 1620	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NE2 0-6	10/9/12: 1720	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NE3 0-6	10/9/12: 1650	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NE1@depth	10/9/12: 1635	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-NE2@depth	10/9/12: 1735	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NE3@depth	10/9/12: 1700	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-NE4 0-6	10/9/12: 1755	SO	1	x	x	x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY	DATE:TIME
	10/12/12 : 1300	LTB	10.16.12 10:00

2

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 29, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97367

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97367. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97367. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 29, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97367-01***
Sample ID:	RINSATE1	Date Sampled:	*10/10/12 09:15*
		Date Received:	*10/16/12*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/22/12 11:39	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	0.0016	B		mg/L	0.0005	0.003	10/23/12 11:42	pmc

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5

Sample ID: RINSATE2

ACZ Sample ID: ***L97367-02***

Date Sampled: *10/10/12 10:00*

Date Received: *10/16/12*

Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/22/12 11:51	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	0.0012	B		mg/L	0.0005	0.003	10/23/12 11:45	pmc

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97367-03***
Sample ID:	RINSATE3	Date Sampled:	*10/10/12 11:15*
		Date Received:	*10/16/12*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/22/12 12:28	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS		U		mg/L	0.0005	0.003	10/23/12 11:55	pmc

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97367-04***
Sample ID:	RINSATE4	Date Sampled:	*10/10/12 13:15*
		Date Received:	*10/16/12*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/23/12 13:54	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	0.0010	B	*	mg/L	0.0005	0.003	10/25/12 20:57	pmc

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97367-05***
Project ID:	ZN000001M5	Date Sampled:	*10/12/12 12:25*
Sample ID:	RINSATE5	Date Received:	*10/16/12*
		Sample Matrix:	*Surface Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							10/23/12 14:06	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper, total	M200.8 ICP-MS	0.0017	B	*	mg/L	0.0005	0.003	10/25/12 21:00	pmc

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Copper, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG332643													
WG332643ICV	ICV	10/23/12 10:14	MS121001-5	.05		.05236	mg/L	104.7	90	110			
WG332643ICB	ICB	10/23/12 10:17				U	mg/L		-0.0015	0.0015			
WG332587LRB	LRB	10/23/12 10:21				U	mg/L		-0.0011	0.0011			
WG332587LFB	LFB	10/23/12 10:24	MS121009-6	.05005		.04748	mg/L	94.9	85	115			
L97367-02LFM	LFM	10/23/12 11:49	MS121009-6	.05005	.0012	.04654	mg/L	90.6	70	130			
L97367-02LFMD	LFMD	10/23/12 11:52	MS121009-6	.05005	.0012	.04763	mg/L	92.8	70	130	2.31	20	
WG332838													
WG332838ICV	ICV	10/25/12 20:40	MS121001-5	.05		.05035	mg/L	100.7	90	110			
WG332838ICB	ICB	10/25/12 20:43				U	mg/L		-0.0015	0.0015			
WG332665LRB	LRB	10/25/12 20:48				U	mg/L		-0.0011	0.0011			
WG332665LFB	LFB	10/25/12 20:51	MS121009-6	.05005		.04912	mg/L	98.1	85	115			
L97265-03LFM	LFM	10/25/12 22:01	MS121009-6	.05005	45.6	45.095	mg/L	-1009	70	130			M3
L97265-03LFMD	LFMD	10/25/12 22:04	MS121009-6	.05005	45.6	43.85	mg/L	-3496.5	70	130	2.8	20	M3

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97367-04	WG332838	Copper, total	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97367-05	WG332838	Copper, total	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L97367***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L97367
Date Received: 10/16/2012 10:10
Received By: ksj
Date Printed: 10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		▨

```
A change was made in the page 1: line 1, 2 and relinquished
date, page 2: lines1-7 and relinquished date section prior to
ACZ custody.
```

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
NA16400        2.1            15               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Monday 10/15/12

1 of 2

ACZ Laboratories, Inc. L97367

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

L97367 Chain of Custody

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES ☒
NO ☐

Are samples for CO DW Compliance Monitoring?
If yes, please include state forms. Results will be reported to PQL.

YES ☐
NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Total Copper					
~~[illegible]~~	~~[illegible]~~	~~SO~~	~~1~~	~~x~~	~~x~~	~~x~~						
~~[illegible]~~	~~[illegible]~~	~~SO~~	~~1~~	~~x~~	~~x~~	~~x~~						
RINSATE1	10/10/12:0915	W	1				x					
RINSATE2	10/10/12:1000	W	1				x					
RINSATE3	10/10/12:1115	W	1				x					
RINSATE4	10/10/12:1315	W	1				x					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/16/12:1500		10-16-12 10:10

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

Monday 10/15/12

2 of 2

ACZ Laboratories, Inc. L97367

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	pH	Total CU	ABA				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]					
(PQ) ~~RINSATE6~~ RINSATE 5	10/12/12 : 1225	W	1			X					
(GP) [redacted]	[redacted]	[redacted]	[redacted]								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Total Copper - 6010B

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/15/12 : 1500		10.16.12 10:10

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 30, 2012

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley

Project ID: ZN000001M5
ACZ Project ID: L97381

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 16, 2012. This project has been assigned to ACZ's project number, L97381. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97381. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 30, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-NE5 0-6

ACZ Sample ID: ***L97381-01***
Date Sampled: *10/09/12 18:00*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 9:38	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.26		*	mg/L	0.01	0.05	11/29/12 3:29	aeb
Copper, total (3050)	M6010B ICP	2670		*	mg/Kg	1	5	11/12/12 9:36	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.3		*	units	0.1	0.1	11/13/12 9:43	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.3		*	%	0.1	0.5	11/12/12 18:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 5:36	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 11:56	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:15	jjc
Synthetic Precip. Leaching Procedure	M1312							11/26/12 19:27	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97381-02***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 18:10*
Sample ID:	STS-AMD-2012F-NE6 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 10:14	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.51		*	mg/L	0.01	0.05	11/29/12 3:38	aeb
Copper, total (3050)	M6010B ICP	2350		*	mg/Kg	1	5	11/12/12 9:39	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	6.4		*	units	0.1	0.1	11/13/12 9:46	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.5		*	%	0.1	0.5	11/12/12 22:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 7:32	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 12:55	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:06	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:20	jjc
Synthetic Precip. Leaching Procedure	M1312							11/26/12 21:40	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-03***
Sample ID:	STS-AMD-2012F-NE7 0-6	Date Sampled:	*10/09/12 18:05*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 10:26	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.20		*	mg/L	0.01	0.05	11/29/12 3:41	aeb
Copper, total (3050)	M6010B ICP	2390		*	mg/Kg	1	5	11/12/12 9:42	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	11/13/12 9:50	mss2
Solids, Percent	CLPSOW390, PART F, D-98	92.7		*	%	0.1	0.5	11/13/12 0:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 9:27	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 13:54	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:12	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:26	jjc
Synthetic Precip. Leaching Procedure	M1312							11/26/12 22:25	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97381-04***
Project ID:	ZN000001M5	Date Sampled:	*10/09/12 18:20*
Sample ID:	STS-AMD-2012F-NE8 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 10:38	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.80		*	mg/L	0.01	0.05	11/29/12 3:44	aeb
Copper, total (3050)	M6010B ICP	2520		*	mg/Kg	1	5	11/12/12 9:46	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	4.7		*	units	0.1	0.1	11/13/12 9:53	mss2
Solids, Percent	CLPSOW390, PART F, D-98	95.2		*	%	0.1	0.5	11/13/12 2:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 11:23	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 14:52	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:18	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:31	jjc
Synthetic Precip. Leaching Procedure	M1312							11/26/12 23:09	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-WREF1 0-6

ACZ Sample ID: ***L97381-05***
Date Sampled: *10/08/12 17:00*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 16:35	mpb
Total Hot Plate Digestion	M3010A ICP							11/28/12 10:49	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	23900			mg/Kg	20	100	11/12/12 9:49	aeb
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/29/12 3:48	aeb
Copper, total (3050)	M6010B ICP	1380		*	mg/Kg	1	5	11/12/12 9:49	aeb
Potassium, total (3050)	M6010B ICP	2790			mg/Kg	30	200	11/12/12 9:49	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.0	H	*	%	0.1	0.5	11/09/12 10:24	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/09/12 10:24	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/13/12 9:56	mss2
Solids, Percent	CLPSOW390, PART F, D-98	97.3		*	%	0.1	0.5	11/13/12 4:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 13:19	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 15:15	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 15:51	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:24	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:37	jjc
Synthetic Precip. Leaching Procedure	M1312							11/26/12 23:54	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 15:28	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.7			mg/Kg	0.1	0.5	11/30/12 9:48	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.9		*	mg/Kg	0.1	0.5	11/13/12 23:45	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.23	B	*	mg/Kg	0.05	0.3	11/13/12 23:45	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:11	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.106		*	%	0.001	0.007	10/27/12 15:54	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-WREF2 0-6

ACZ Sample ID: ***L97381-06***
Date Sampled: *10/08/12 17:10*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 16:47	mpb
Total Hot Plate Digestion	M3010A ICP							11/28/12 11:01	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	17500			mg/Kg	20	100	11/12/12 9:52	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/29/12 3:51	aeb
Copper, total (3050)	M6010B ICP	1060		*	mg/Kg	1	5	11/12/12 9:52	aeb
Potassium, total (3050)	M6010B ICP	3040			mg/Kg	30	200	11/12/12 9:52	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.1	H	*	%	0.1	0.5	11/09/12 11:48	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/12 11:48	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/13/12 10:00	mss2
Solids, Percent	CLPSOW390, PART F, D-98	97.1		*	%	0.1	0.5	11/13/12 6:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 15:15	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 15:30	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 16:50	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:30	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:42	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 0:38	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 15:56	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.9			mg/Kg	0.1	0.5	11/30/12 9:48	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.2		*	mg/Kg	0.1	0.5	11/13/12 23:47	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.32		*	mg/Kg	0.05	0.3	11/13/12 23:47	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:13	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.122		*	%	0.002	0.008	10/27/12 15:55	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-WREF1@DEPTH

ACZ Sample ID: ***L97381-07***
Date Sampled: *10/08/12 16:50*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/25/12 16:59	mpb
Total Hot Plate Digestion	M3010A ICP							11/28/12 11:13	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	56800			mg/Kg	20	100	11/12/12 9:55	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/29/12 4:03	aeb
Copper, total (3050)	M6010B ICP	283		*	mg/Kg	1	5	11/12/12 9:55	aeb
Potassium, total (3050)	M6010B ICP	3040			mg/Kg	30	200	11/12/12 9:55	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.0	H	*	%	0.1	0.5	11/09/12 12:30	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/09/12 12:30	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/13/12 10:03	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.8		*	%	0.1	0.5	11/13/12 8:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 17:11	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 15:45	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 17:49	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:36	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:48	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 2:07	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 16:24	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.9			mg/Kg	0.1	0.5	11/30/12 9:49	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.1		*	mg/Kg	0.1	0.5	11/13/12 23:48	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.23	B	*	mg/Kg	0.05	0.3	11/13/12 23:48	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:14	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.116		*	%	0.002	0.01	10/27/12 15:56	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-WREF2@DEPTH

ACZ Sample ID: ***L97381-08***
Date Sampled: *10/08/12 16:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:22	tcd
Total Hot Plate Digestion	M3010A ICP							11/28/12 11:25	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	60600			mg/Kg	20	100	11/12/12 10:10	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/29/12 4:06	aeb
Copper, total (3050)	M6010B ICP	260		*	mg/Kg	1	5	11/12/12 10:10	aeb
Potassium, total (3050)	M6010B ICP	2270			mg/Kg	30	200	11/12/12 10:10	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.1	H	*	%	0.1	0.5	11/09/12 13:12	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	11/09/12 13:12	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/13/12 10:06	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.3		*	%	0.1	0.5	11/13/12 10:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 19:07	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 16:00	jjc
Digestion - Hot Plate	M3050B ICP							11/09/12 20:45	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:42	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:53	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 2:52	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 16:52	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.3			mg/Kg	0.1	0.5	11/30/12 9:49	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.5		*	mg/Kg	0.1	0.5	11/13/12 23:49	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.17	B	*	mg/Kg	0.05	0.3	11/13/12 23:49	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:15	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.104		*	%	0.002	0.01	10/30/12 13:53	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-09***
Sample ID:	STS-AMD-2012F-WREF3 0-6	Date Sampled:	*10/08/12 17:20*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 11:37	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/29/12 4:09	aeb
Copper, total (3050)	M6010B ICP	648		*	mg/Kg	1	5	11/12/12 10:13	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/13/12 10:10	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.1		*	%	0.1	0.5	11/13/12 12:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 21:02	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 21:44	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:48	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 15:59	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 3:36	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-WREF4 0-6

ACZ Sample ID: ***L97381-10***
Date Sampled: *10/08/12 17:30*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 11:49	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	11/29/12 4:13	aeb
Copper, total (3050)	M6010B ICP	1970		*	mg/Kg	1	5	11/12/12 10:16	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	8.0		*	units	0.1	0.1	11/13/12 10:13	mss2
Solids, Percent	CLPSOW390, PART F, D-98	97.2		*	%	0.1	0.5	11/13/12 14:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/04/12 22:58	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 22:43	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 15:54	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:04	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 4:21	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-WREF5 0-6

ACZ Sample ID: ***L97381-11***
Date Sampled: *10/08/12 17:40*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 12:01	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/29/12 4:16	aeb
Copper, total (3050)	M6010B ICP	850		*	mg/Kg	1	5	11/12/12 10:19	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	8.2		*	units	0.1	0.1	11/13/12 10:20	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.2		*	%	0.1	0.5	11/13/12 16:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 0:54	mjj
Digestion - Hot Plate	M3050B ICP							11/09/12 23:42	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:10	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 5:05	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-12***
Sample ID:	STS-AMD-2012F-WREF6 0-6	Date Sampled:	*10/08/12 17:50*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 12:13	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.04	B	*	mg/L	0.01	0.05	11/29/12 4:19	aeb
Copper, total (3050)	M6010B ICP	1160		*	mg/Kg	1	5	11/12/12 10:22	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	8.1		*	units	0.1	0.1	11/13/12 10:23	mss2
Solids, Percent	CLPSOW390, PART F, D-98	96.4		*	%	0.1	0.5	11/13/12 18:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 2:50	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 0:40	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:06	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:15	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 5:50	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-13***
Sample ID:	STS-AMD-2012F-WREF7 0-6	Date Sampled:	*10/08/12 18:00*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 12:24	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/29/12 4:22	aeb
Copper, total (3050)	M6010B ICP	356		*	mg/Kg	1	5	11/12/12 10:25	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	8.1		*	units	0.1	0.1	11/13/12 10:26	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.7		*	%	0.1	0.5	11/13/12 20:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 4:46	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 1:39	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:12	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:21	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 6:34	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97381-14***
Project ID:	ZN000001M5	Date Sampled:	*10/08/12 18:10*
Sample ID:	STS-AMD-2012F-WREF8 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 12:36	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.05		*	mg/L	0.01	0.05	11/29/12 4:25	aeb
Copper, total (3050)	M6010B ICP	1480		*	mg/Kg	1	5	11/12/12 10:28	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	8.1		*	units	0.1	0.1	11/13/12 10:30	mss2
Solids, Percent	CLPSOW390, PART F, D-98	97.9		*	%	0.1	0.5	11/13/12 22:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 6:41	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 2:38	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:18	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:26	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 7:19	mss2

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L97381-15***
Project ID:	ZN000001M5	Date Sampled:	*10/10/12 11:05*
Sample ID:	STS-AMD-2012F-EREF1 0-6	Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:23	tcd
Total Hot Plate Digestion	M3010A ICP							11/28/12 12:48	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2600			mg/Kg	20	100	11/12/12 10:41	aeb
Copper (1312)	M6010B ICP	0.17		*	mg/L	0.01	0.05	11/29/12 4:28	aeb
Copper, total (3050)	M6010B ICP	1240		*	mg/Kg	1	5	11/12/12 10:41	aeb
Potassium, total (3050)	M6010B ICP	2790			mg/Kg	30	200	11/12/12 10:41	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1	H	*	%	0.1	0.5	11/09/12 13:54	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/09/12 13:54	mss2
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	11/13/12 10:33	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.9		*	%	0.1	0.5	11/14/12 0:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 8:37	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 16:15	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 3:37	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:24	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:32	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 8:03	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 17:21	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	5.2			mg/Kg	0.5	3	11/30/12 9:49	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.2		*	mg/Kg	0.5	3	11/13/12 23:51	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.3	1	11/13/12 23:51	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	3	30	11/14/12 14:17	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.076		*	%	0.002	0.008	10/30/12 13:54	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-16***
Sample ID:	STS-AMD-2012F-EREF2 0-6	Date Sampled:	*10/10/12 12:10*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:23	tcd
Total Hot Plate Digestion	M3010A ICP							11/28/12 13:00	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5790			mg/Kg	20	100	11/12/12 10:44	aeb
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/29/12 4:38	aeb
Copper, total (3050)	M6010B ICP	910		*	mg/Kg	1	5	11/12/12 10:44	aeb
Potassium, total (3050)	M6010B ICP	3140			mg/Kg	30	200	11/12/12 10:44	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0	H	*	%	0.1	0.5	11/09/12 14:36	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	11/09/12 14:36	mss2
pH, Saturated Paste	USDA No. 60 (21A)	6.9		*	units	0.1	0.1	11/13/12 10:36	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.2		*	%	0.1	0.5	11/14/12 2:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 10:33	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 16:30	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 4:36	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:30	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:38	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 8:48	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 17:49	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	8.7			mg/Kg	0.1	0.5	11/30/12 9:49	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	8.8		*	mg/Kg	0.1	0.5	11/13/12 23:52	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.12	B	*	mg/Kg	0.05	0.3	11/13/12 23:52	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	11/14/12 14:18	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.052		*	%	0.002	0.008	10/30/12 13:55	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-17***
Sample ID:	STS-AMD-2012F-EREF1@DEPTH	Date Sampled:	*10/10/12 12:05*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:23	tcd
Total Hot Plate Digestion	M3010A ICP							11/28/12 13:12	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8220			mg/Kg	20	100	11/12/12 10:47	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/29/12 4:41	aeb
Copper, total (3050)	M6010B ICP	58		*	mg/Kg	1	5	11/12/12 10:47	aeb
Potassium, total (3050)	M6010B ICP	5210			mg/Kg	30	200	11/12/12 10:47	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.8	H	*	%	0.1	0.5	11/09/12 15:18	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/09/12 15:18	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	11/13/12 10:40	mss2
Solids, Percent	CLPSOW390, PART F, D-98	80.4		*	%	0.1	0.5	11/14/12 4:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 12:29	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 16:45	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 5:34	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:36	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:43	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 10:17	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 18:17	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	13.0			mg/Kg	0.1	0.5	11/30/12 9:50	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	13.1		*	mg/Kg	0.1	0.5	11/13/12 23:53	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.10	B	*	mg/Kg	0.05	0.3	11/13/12 23:53	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.3	B	*	mg/Kg	0.3	3	11/14/12 14:19	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.078		*	%	0.002	0.01	10/30/12 13:59	tcd

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000001M5
Sample ID: STS-AMD-2012F-EREF2@DEPTH

ACZ Sample ID: ***L97381-18***
Date Sampled: *10/10/12 12:25*
Date Received: *10/16/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl Prep	M351.2 - Block Digestor							10/29/12 17:24	tcd
Total Hot Plate Digestion	M3010A ICP							11/28/12 13:24	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10900			mg/Kg	20	100	11/12/12 10:50	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/29/12 4:44	aeb
Copper, total (3050)	M6010B ICP	239		*	mg/Kg	1	5	11/12/12 10:50	aeb
Potassium, total (3050)	M6010B ICP	4470			mg/Kg	30	200	11/12/12 10:50	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0	H	*	%	0.1	0.5	11/09/12 16:00	mss2
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/09/12 16:00	mss2
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/13/12 10:43	mss2
Solids, Percent	CLPSOW390, PART F, D-98	84.9		*	%	0.1	0.5	11/14/12 6:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 14:25	mjj
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3							11/08/12 17:00	jjc
Digestion - Hot Plate	M3050B ICP							11/10/12 6:33	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:42	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:49	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 11:01	mss2
Water Extraction	ASA No. 9 10-2.3.2							11/12/12 18:45	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.5			mg/Kg	0.1	0.5	11/30/12 9:50	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.6		*	mg/Kg	0.1	0.5	11/13/12 23:56	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	11/13/12 23:56	pjb
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.3	3	11/14/12 14:22	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.065		*	%	0.002	0.01	10/30/12 14:00	tcd

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-19***
Sample ID:	STS-AMD-2012F-EREF3 0-6	Date Sampled:	*10/10/12 12:35*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 13:36	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.05	B	*	mg/L	0.01	0.05	11/29/12 4:47	aeb
Copper, total (3050)	M6010B ICP	1270		*	mg/Kg	1	5	11/12/12 10:53	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/13/12 10:46	mss2
Solids, Percent	CLPSOW390, PART F, D-98	94.7		*	%	0.1	0.5	11/14/12 8:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 16:21	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 7:32	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:48	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 16:54	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 11:46	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000001M5	ACZ Sample ID:	***L97381-20***
Sample ID:	STS-AMD-2012F-EREF4 0-6	Date Sampled:	*10/10/12 12:45*
		Date Received:	*10/16/12*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/28/12 13:47	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Copper (1312)	M6010B ICP	0.09		*	mg/L	0.01	0.05	11/29/12 4:50	aeb
Copper, total (3050)	M6010B ICP	1030		*	mg/Kg	1	5	11/12/12 10:56	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Saturated Paste	USDA No. 60 (21A)	5.3		*	units	0.1	0.1	11/13/12 10:50	mss2
Solids, Percent	CLPSOW390, PART F, D-98	93.3		*	%	0.1	0.5	11/14/12 10:00	mjj

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/05/12 18:16	mjj
Digestion - Hot Plate	M3050B ICP							11/10/12 8:31	cra
Saturated Paste Extraction	USDA No. 60 (2)							11/12/12 16:54	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/12 17:00	jjc
Synthetic Precip. Leaching Procedure	M1312							11/27/12 12:30	mss2

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

WG333896

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333896ICV	ICV	11/12/12 9:12	II120914-3	100		98.26	mg/L	98.3	90	110			
WG333896ICB	ICB	11/12/12 9:15				U	mg/L		-0.6	0.6			
WG333816PBS	PBS	11/12/12 9:27				U	mg/Kg		-60	60			
WG333816LCSS	LCSS	11/12/12 9:30	PCN41127	6160		5740	mg/Kg		5070	7240			
WG333816LCSSD	LCSSD	11/12/12 9:33	PCN41127	6160		6075	mg/Kg		5070	7240	5.7	20	
L97381-07MS	MS	11/12/12 10:04	II121029-3	6933.50508	56800	63985	mg/Kg	103.6	75	125			
L97381-07MSD	MSD	11/12/12 10:07	II121029-3	6933.50508	56800	64127	mg/Kg	105.7	75	125	0.22	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

WG333819

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333819LCSS	LCSS	11/09/12 9:42	PCN41310	4.19		4.5	%		80	120			
L97381-05DUP	DUP	11/09/12 11:06			2	2	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

WG333819

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
L97381-05DUP	DUP	11/09/12 11:06			1.1	1.1	%				0	20	

Copper (1312) M6010B ICP

WG334845

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334845ICV	ICV	11/29/12 3:07	II121127-3	2		1.945	mg/L	97.3	90	110			
WG334845ICB	ICB	11/29/12 3:10				U	mg/L		-0.03	0.03			
WG334630PBS	PBS	11/29/12 3:23				U	mg/L		-0.03	0.03			
WG334630LFB	LFB	11/29/12 3:26	II121029-3	.5		.507	mg/L	101.4	85	115			
L97381-01MS	MS	11/29/12 3:32	II121029-3	.5	.26	.798	mg/L	107.6	75	125			
L97381-01MSD	MSD	11/29/12 3:35	II121029-3	.5	.26	.793	mg/L	106.6	75	125	0.63	20	
L97381-20DUP	DUP	11/29/12 4:53			.09	.098	mg/L				8.5	20	RA

Copper, total (3050) M6010B ICP

WG333896

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333896ICV	ICV	11/12/12 9:12	II120914-3	2		1.935	mg/L	96.8	90	110			
WG333896ICB	ICB	11/12/12 9:15				U	mg/L		-0.03	0.03			
WG333816PBS	PBS	11/12/12 9:27				U	mg/Kg		-3	3			
WG333816LCSS	LCSS	11/12/12 9:30	PCN41127	78		72.3	mg/Kg		65.3	90.6			
WG333816LCSSD	LCSSD	11/12/12 9:33	PCN41127	78		75.8	mg/Kg		65.3	90.6	4.7	20	
L97381-07MS	MS	11/12/12 10:04	II121029-3	51	283	341.3	mg/Kg	114.3	75	125			
L97381-07MSD	MSD	11/12/12 10:07	II121029-3	51	283	314	mg/Kg	60.8	75	125	8.33	20	M3

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	2.416		2.448	mg/L	101.3	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.06	0.06			
WG334068													
WG334068LFB	LFB	11/13/12 23:42	WI120814-9	2		2.02	mg/Kg	101	90	110			
WG333948PBS	PBS	11/13/12 23:44				U	mg/Kg		-0.3	0.3			
L97381-05AS	AS	11/13/12 23:46	WI120814-9	10	1.9	12.75	mg/Kg	108.5	90	110			
L97382-18DUP	DUP	11/14/12 0:07			2.5	2.57	mg/Kg				2.8	20	

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334061													
WG334061ICV	ICV	11/13/12 20:37	WI121009-1	.609		.62	mg/L	101.8	90	110			
WG334061ICB	ICB	11/13/12 20:38				U	mg/L		-0.03	0.03			
WG334068													
WG334068LFB	LFB	11/13/12 23:42	WI120814-9	1		1.037	mg/Kg	103.7	90	110			
WG333948PBS	PBS	11/13/12 23:44				U	mg/Kg		-0.15	0.15			
L97381-05AS	AS	11/13/12 23:46	WI120814-9	5	.23	5.459	mg/Kg	104.6	90	110			
L97382-18DUP	DUP	11/14/12 0:07			.09	.065	mg/Kg				32.3	20	RA

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334103													
WG334103ICV	ICV	11/14/12 12:02	WI121105-5	1.003		.995	mg/L	99.2	90	110			
WG334103ICB	ICB	11/14/12 12:03				U	mg/L		-0.15	0.15			
WG334131													
WG334131LFB	LFB	11/14/12 14:09	WI111101-3	1		.946	mg/L	94.6	90	110			
WG333948PBS	PBS	11/14/12 14:10				U	mg/Kg		-0.9	0.9			
L97381-05MS	MS	11/14/12 14:12	NH3-WE50X	2500	U	51.4	mg/Kg	102.8	75	125			
L97382-18DUP	DUP	11/14/12 14:32			U	U	mg/Kg				0	20	RA

Nitrogen, total Kjeldahl M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333039													
WG333039ICV	ICV	10/27/12 15:09	WI121005-1	4		3.9	mg/L	97.5	90	110			
WG333039ICB	ICB	10/27/12 15:10				.19	mg/L		-0.3	0.3			
WG332786PBS1	PBS	10/27/12 15:11				.0036	%		-0.006	0.006			
WG332786LFB1	LFB	10/27/12 15:13	WI120814-2	2.5		2.72	%	108.8	85	115			
L97380-08MS	MS	10/27/12 15:41	WI120814-2	.035	.105	.1317	%	76.3	75	125			
WG332786PBS2	PBS	10/27/12 15:43				.0025	%		-0.006	0.006			
WG332786LFB2	LFB	10/27/12 15:44	WI120814-2	2.5		2.73	%	109.2	85	115			
L97380-14DUP	DUP	10/27/12 15:45			.146	.1153	%				23.5	20	RD
WG333155													
WG333155ICV	ICV	10/30/12 12:55	WI121005-1	4		3.96	mg/L	99	90	110			
WG333155ICB	ICB	10/30/12 12:57				.11	mg/L		-0.3	0.3			
WG333157													
WG333088PBS	PBS	10/30/12 13:45				U	%		-0.006	0.006			
WG333088LFB	LFB	10/30/12 13:46	WI120814-2	2.5		2.65	%	106	85	115			
L97307-01MS	MS	10/30/12 13:49	WI120814-2	.045	.011	.059	%	106.7	75	125			
L97307-02DUP	DUP	10/30/12 14:14			.466	.4055	%				13.9	20	

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333992													
WG333992ICV	ICV	11/13/12 9:40	PCN38642	4		3.99	units	99.8	97	103			
L97381-20DUP	DUP	11/13/12 10:56			5.3	5.27	units				0.6	20	

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333896													
WG333896ICV	ICV	11/12/12 9:12	II120914-3	20		19.74	mg/L	98.7	90	110			
WG333896ICB	ICB	11/12/12 9:15				U	mg/L		-0.9	0.9			
WG333816PBS	PBS	11/12/12 9:27				U	mg/Kg		-90	90			
WG333816LCSS	LCSS	11/12/12 9:30	PCN41127	3820		3693	mg/Kg		2810	4830			
WG333816LCSSD	LCSSD	11/12/12 9:33	PCN41127	3820		3852	mg/Kg		2810	4830	4.2	20	
L97381-07MS	MS	11/12/12 10:04	II121029-3	10190.68536	3040	13627	mg/Kg	103.9	75	125			
L97381-07MSD	MSD	11/12/12 10:07	II121029-3	10190.68536	3040	13444	mg/Kg	102.1	75	125	1.35	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333958													
WG333958PBS	PBS	11/12/12 16:00				U	%		99.9	100.1			
L97381-01DUP	DUP	11/12/12 20:00			95.3	94.37	%				1	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-01	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-02	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-03	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-04	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-05	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-06	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-07	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333039	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-08	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97381-09	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-10	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-11	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-12	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-13	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-14	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-15	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	D1	Sample required dilution due to matrix.
			M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	DD	Sample required dilution due to matrix color or odor.
			M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-16	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97381-17	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97381-18	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG333819	Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG334068	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG334131	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333157	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
L97381-19	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L97381-20	WG334845	Copper (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333896	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester

Freeport-McMoRan - Chino Mines Company
ZN000001M5

ACZ Project ID: L97381
Date Received: 10/16/2012 10:25
Received By: ksj
Date Printed: 10/16/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

```
Cooler Id      Temp (°C)      Rad (µR/Hr)      Custody Seal Intact?
---------      ---------      -----------      --------------------
2392           14.9           17               Yes
3181           14.4           15               Yes
3638           14.6           15               Yes
3673           14.6           16               Yes
NA16407        14.5           18               Yes
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97381
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-NE5 0-6	10/9/12 : 1800	SO	1	X	X	X					
STS-AMD-2012F-NE6 0-6	10/9/12 : 1810	SO	1	X	X	X					
STS-AMD-2012F-NE7 0-6	10/9/12 : 1805	SO	1	X	X	X					
STS-AMD-2012F-NE8 0-6	10/9/12 : 1820	SO	1	X	X	X					
STS-AMD-2012F-WREF1 0-6	10/8/12 : 1700	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012F-WREF2 0-6	10/8/12 : 1710	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012F-WREF1 @depth	10/8/12 : 1650	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012F-WREF2 @depth	10/8/12 : 1630	SO	1	X	X	X	X	X	X	X	
STS-AMD-2012F-WREF3 0-6	10/8/12 : 1720	SO	1	X	X	X					
STS-AMD-2012F-WREF4 0-6	10/8/12 : 1730	SO	1	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/12/12 : 1300		10.16.12 10:00

L97381 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L97381

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Garett Ferguson
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium, Potassium, Total Organic Carbon	TKN (see below)	Nitrate/Nitrite as N (see below)	Ammonia (see below)	
STS-AMD-2012F-WREF5 0-6	10/8/12: 1740	SO	1	x	x	x					
STS-AMD-2012F-WREF6 0-6	10/8/12: 1750	SO	1	x	x	x					
STS-AMD-2012F-WREF7 0-6	10/8/12: 1806	SO	1	x	x	x					
STS-AMD-2012F-WREF8 0-6	10/8/12: 1810	SO	1	x	x	x					
STS-AMD-2012F-EREF1 0-6	10/10/12: 1150	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-EREF2 0-6	10/10/12: 1210	SO	1	x	x	x	x	x	x	x	
STS-AMD-2012F-EREF1 @ depth	10/10/12: 1205	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-EREF2 @ depth	10/10/12: 1225	SO	1	x	x	x	x	x	x	x	@depth = 1.0-1.5
STS-AMD-2012F-EREF3 0-6	10/10/12: 1235	SO	1	x	x	x					
STS-AMD-2012F-EREF4 0-6	10/10/12: 1245	SO	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:

pH - 9045C, Calcium - 6010B, Potassium - 6010B, Ammonia - 350.1, TKN - SM4500 (organic), Nitrate/Nitrite - 353.2, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/11/12 1300		10.16.12 10:00

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

2

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 14, 2011

Report to:	Bill to:
Pam Pinson	Pam Pinson
Freeport-McMoRan - Chino Mines Company	Freeport-McMoRan - Chino Mines Company
PO Box 10	P.O. Box 13308
Bayard, NM 88023	Phoenix, AZ 85002-3308

cc: Matthew Barkley, Sheri Fling

Project ID: ZN000000J8
ACZ Project ID: L91218

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 12, 2011. This project has been assigned to ACZ's project number, L91218. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L91218. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 14, 2011. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91218-01***
Project ID:	ZN000000J8	Date Sampled:	*10/06/11 09:55*
Sample ID:	STS-AMD-2011-E3 0-6	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 10:13	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2700			mg/Kg	20	100	11/10/11 11:31	aeb
Copper (1312)	M6010B ICP	0.12		*	mg/L	0.01	0.05	11/07/11 14:01	jjc
Copper, total (3050)	M6010B ICP	1080		*	mg/Kg	1	5	11/10/11 11:31	aeb
Potassium, total (3050)	M6010B ICP	2600			mg/Kg	30	200	11/10/11 11:31	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.8	H	*	%	0.1	0.5	11/08/11 16:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/08/11 16:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.0		*	units	0.1	0.1	11/09/11 15:51	ndj
Solids, Percent	CLPSOW390, PART F, D-98	88.0		*	%	0.1	0.5	11/01/11 17:31	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:00	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:03	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:00	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 15:49	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 15:49	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:06	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 11:41	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	4.8			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.0		*	mg/Kg	0.1	0.5	11/09/11 21:57	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	11/09/11 21:57	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91218-02***
Sample ID:	STS-AMD-2011-E1 6-12	Date Sampled:	*10/06/11 09:40*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 10:55	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6770			mg/Kg	20	100	11/10/11 11:35	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/07/11 14:10	jjc
Copper, total (3050)	M6010B ICP	113		*	mg/Kg	1	5	11/10/11 11:35	aeb
Potassium, total (3050)	M6010B ICP	6600			mg/Kg	30	200	11/10/11 11:35	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/08/11 18:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/08/11 18:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	6.9		*	units	0.1	0.1	11/09/11 15:55	ndj
Solids, Percent	CLPSOW390, PART F, D-98	81.8		*	%	0.1	0.5	11/01/11 17:32	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:04	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:04	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:03	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 15:52	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 15:52	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:09	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 12:04	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.3			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.5		*	mg/Kg	0.1	0.5	11/09/11 22:00	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.18	B	*	mg/Kg	0.05	0.3	11/09/11 22:00	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91218-03***
Project ID:	ZN000000J8	Date Sampled:	*10/06/11 09:35*
Sample ID:	STS-AMD-2011-E2 6-12	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 11:09	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	3860			mg/Kg	20	100	11/10/11 11:38	aeb
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	11/07/11 14:14	jjc
Copper, total (3050)	M6010B ICP	868		*	mg/Kg	1	5	11/10/11 11:38	aeb
Potassium, total (3050)	M6010B ICP	3780			mg/Kg	30	200	11/10/11 11:38	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2	H	*	%	0.1	0.5	11/08/11 19:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/08/11 19:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	11/09/11 15:56	ndj
Solids, Percent	CLPSOW390, PART F, D-98	91.1		*	%	0.1	0.5	11/01/11 17:34	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:08	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:05	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:04	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 15:55	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 15:55	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:10	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 12:15	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	12.3			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	12.4		*	mg/Kg	0.1	0.5	11/09/11 22:02	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.11	B	*	mg/Kg	0.05	0.3	11/09/11 22:02	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91218-04***
Project ID:	ZN000000J8	Date Sampled:	*10/06/11 10:15*
Sample ID:	STS-AMD-2011-E3 6-12	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 11:23	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	3190			mg/Kg	20	100	11/10/11 11:41	aeb
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	11/07/11 14:17	jjc
Copper, total (3050)	M6010B ICP	630		*	mg/Kg	1	5	11/10/11 11:41	aeb
Potassium, total (3050)	M6010B ICP	3110			mg/Kg	30	200	11/10/11 11:41	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1	H	*	%	0.1	0.5	11/08/11 20:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/08/11 20:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.2		*	units	0.1	0.1	11/09/11 15:58	ndj
Solids, Percent	CLPSOW390, PART F, D-98	88.3		*	%	0.1	0.5	11/01/11 17:35	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:12	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:06	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:06	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 15:58	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 15:58	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:11	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 12:27	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.4			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.7		*	mg/Kg	0.1	0.5	11/09/11 22:03	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	11/09/11 22:03	pjb

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-WREF1 0

ACZ Sample ID: ***L91218-05***
Date Sampled: *10/04/11 09:30*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 11:37	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	13500			mg/Kg	20	100	11/10/11 11:44	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/07/11 14:20	jjc
Copper, total (3050)	M6010B ICP	731		*	mg/Kg	1	5	11/10/11 11:44	aeb
Potassium, total (3050)	M6010B ICP	3670			mg/Kg	30	200	11/10/11 11:44	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.7	H	*	%	0.1	0.5	11/08/11 21:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/08/11 21:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/09/11 16:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	92.6		*	%	0.1	0.5	11/01/11 17:37	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:16	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:07	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:07	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:01	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:01	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:12	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 12:38	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.3			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.7		*	mg/Kg	0.1	0.5	11/09/11 22:04	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.34		*	mg/Kg	0.05	0.3	11/09/11 22:04	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-WREF2 0

ACZ Sample ID: ***L91218-06***
Date Sampled: *10/04/11 09:55*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 11:51	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	28200			mg/Kg	20	100	11/10/11 11:47	aeb
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/07/11 14:23	jjc
Copper, total (3050)	M6010B ICP	690		*	mg/Kg	1	5	11/10/11 11:47	aeb
Potassium, total (3050)	M6010B ICP	3740			mg/Kg	30	200	11/10/11 11:47	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.6	H	*	%	0.1	0.5	11/08/11 22:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	11/08/11 22:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/09/11 16:01	ndj
Solids, Percent	CLPSOW390, PART F, D-98	91.8		*	%	0.1	0.5	11/01/11 17:38	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:20	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:08	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:09	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:04	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:04	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:13	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 12:50	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.0			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.3		*	mg/Kg	0.1	0.5	11/09/11 22:06	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.26	B	*	mg/Kg	0.05	0.3	11/09/11 22:06	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-WREF1 1

ACZ Sample ID: ***L91218-07***
Date Sampled: *10/04/11 10:26*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 12:05	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	49900			mg/Kg	20	100	11/10/11 11:59	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/07/11 14:32	jjc
Copper, total (3050)	M6010B ICP	316		*	mg/Kg	1	5	11/11/11 0:31	jjc
Potassium, total (3050)	M6010B ICP	4180			mg/Kg	30	200	11/10/11 11:59	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.4	H	*	%	0.1	0.5	11/08/11 23:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/08/11 23:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/09/11 16:03	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.1		*	%	0.1	0.5	11/01/11 17:40	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:25	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:09	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:10	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:07	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:07	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:15	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 13:01	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.5			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.7		*	mg/Kg	0.1	0.5	11/09/11 22:09	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.18	B	*	mg/Kg	0.05	0.3	11/09/11 22:09	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-WREF2 1

ACZ Sample ID: ***L91218-08***
Date Sampled: *10/04/11 10:40*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 12:19	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	77800			mg/Kg	20	100	11/10/11 12:02	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/07/11 14:35	jjc
Copper, total (3050)	M6010B ICP	267		*	mg/Kg	1	5	11/11/11 0:37	jjc
Potassium, total (3050)	M6010B ICP	4060			mg/Kg	30	200	11/10/11 12:02	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	4.4	H	*	%	0.1	0.5	11/09/11 0:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	11/09/11 0:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.9		*	units	0.1	0.1	11/09/11 16:05	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.2		*	%	0.1	0.5	11/01/11 17:41	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:29	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:10	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:12	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:10	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:10	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:16	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 13:12	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.8			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.1		*	mg/Kg	0.1	0.5	11/09/11 22:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	11/09/11 22:10	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NREF1 0

ACZ Sample ID: ***L91218-09***
Date Sampled: *10/05/11 10:00*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 12:33	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6510			mg/Kg	20	100	11/10/11 12:05	aeb
Copper (1312)	M6010B ICP	0.08		*	mg/L	0.01	0.05	11/07/11 14:38	jjc
Copper, total (3050)	M6010B ICP	821		*	mg/Kg	1	5	11/11/11 0:41	jjc
Potassium, total (3050)	M6010B ICP	4040			mg/Kg	30	200	11/10/11 12:05	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/09/11 1:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/11 1:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	6.4		*	units	0.1	0.1	11/09/11 16:06	ndj
Solids, Percent	CLPSOW390, PART F, D-98	93.4		*	%	0.1	0.5	11/01/11 17:42	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:33	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:11	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:13	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:13	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:13	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:17	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 13:24	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	17.8			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	18.0		*	mg/Kg	0.1	0.5	11/09/11 22:12	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.16	B	*	mg/Kg	0.05	0.3	11/09/11 22:12	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NREF2 0

ACZ Sample ID: ***L91218-10***
Date Sampled: *10/05/11 10:50*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 12:47	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4680			mg/Kg	20	100	11/10/11 12:08	aeb
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	11/07/11 14:42	jjc
Copper, total (3050)	M6010B ICP	901		*	mg/Kg	1	5	11/11/11 0:44	jjc
Potassium, total (3050)	M6010B ICP	3200			mg/Kg	30	200	11/10/11 12:08	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2	H	*	%	0.1	0.5	11/09/11 2:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	11/09/11 2:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.1		*	units	0.1	0.1	11/09/11 16:10	ndj
Solids, Percent	CLPSOW390, PART F, D-98	93.6		*	%	0.1	0.5	11/01/11 17:44	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:37	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:12	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:15	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:16	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:16	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:18	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 13:35	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.9			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.1		*	mg/Kg	0.1	0.5	11/09/11 22:13	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.11	B	*	mg/Kg	0.05	0.3	11/09/11 22:13	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91218-11***
Project ID:	ZN000000J8	Date Sampled:	*10/05/11 10:50*
Sample ID:	STS-AMD-2011-NREF1 1	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 13:01	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	51200			mg/Kg	20	100	11/10/11 12:17	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/07/11 14:48	jjc
Copper, total (3050)	M6010B ICP	128		*	mg/Kg	1	5	11/11/11 1:01	jjc
Potassium, total (3050)	M6010B ICP	3900			mg/Kg	30	200	11/10/11 12:17	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.7	H	*	%	0.1	0.5	11/09/11 3:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.5		*	%	0.1	0.5	11/09/11 3:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.6		*	units	0.1	0.1	11/09/11 16:11	ndj
Solids, Percent	CLPSOW390, PART F, D-98	89.5		*	%	0.1	0.5	11/01/11 17:45	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:41	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:15	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:16	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:20	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:20	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:19	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 13:47	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.6			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.8		*	mg/Kg	0.1	0.5	11/09/11 22:14	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.15	B	*	mg/Kg	0.05	0.3	11/09/11 22:14	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91218-12***
Sample ID:	STS-AMD-2011-NREF2 1	Date Sampled:	*10/05/11 11:20*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 13:15	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9470			mg/Kg	20	100	11/10/11 12:20	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/07/11 14:51	jjc
Copper, total (3050)	M6010B ICP	98		*	mg/Kg	1	5	11/11/11 1:04	jjc
Potassium, total (3050)	M6010B ICP	4650			mg/Kg	30	200	11/10/11 12:20	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0	H	*	%	0.1	0.5	11/09/11 4:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/09/11 4:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/09/11 16:13	ndj
Solids, Percent	CLPSOW390, PART F, D-98	88.0		*	%	0.1	0.5	11/01/11 17:47	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:46	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:16	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:18	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:23	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:23	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:20	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 13:58	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.6			mg/Kg	0.1	0.5	11/14/11 12:25	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.8		*	mg/Kg	0.1	0.5	11/09/11 22:15	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.15	B	*	mg/Kg	0.05	0.3	11/09/11 22:15	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NEREF1

ACZ Sample ID: ***L91218-13***
Date Sampled: *10/07/11 10:20*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 13:29	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	4130			mg/Kg	20	100	11/10/11 12:23	aeb
Copper (1312)	M6010B ICP	6.29		*	mg/L	0.01	0.05	11/07/11 14:54	jjc
Copper, total (3050)	M6010B ICP	4050		*	mg/Kg	1	5	11/11/11 1:07	jjc
Potassium, total (3050)	M6010B ICP	3590			mg/Kg	30	200	11/10/11 12:23	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/09/11 5:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/11 5:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	4.2		*	units	0.1	0.1	11/09/11 16:15	ndj
Solids, Percent	CLPSOW390, PART F, D-98	92.3		*	%	0.1	0.5	11/01/11 17:48	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:50	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:17	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:19	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:26	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:26	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:21	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 14:10	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	17.1			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	17.2		*	mg/Kg	0.1	0.5	11/09/11 22:16	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.08	B	*	mg/Kg	0.05	0.3	11/09/11 22:16	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91218-14***
Sample ID:	STS-AMD-2011-NEREF2	Date Sampled:	*10/07/11 10:05*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 13:43	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5330			mg/Kg	20	100	11/10/11 12:26	aeb
Copper (1312)	M6010B ICP	0.21		*	mg/L	0.01	0.05	11/07/11 14:57	jjc
Copper, total (3050)	M6010B ICP	2420		*	mg/Kg	1	5	11/11/11 1:11	jjc
Potassium, total (3050)	M6010B ICP	4590			mg/Kg	30	200	11/10/11 12:26	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/09/11 6:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/11 6:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.0		*	units	0.1	0.1	11/09/11 16:16	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.6		*	%	0.1	0.5	11/01/11 17:50	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:54	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:18	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:21	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:29	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:29	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:22	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 14:21	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	7.0			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	7.1		*	mg/Kg	0.1	0.5	11/09/11 22:18	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.06	B	*	mg/Kg	0.05	0.3	11/09/11 22:18	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91218-15***
Sample ID:	STS-AMD-2011-NEREF1	Date Sampled:	*10/07/11 11:05*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 13:57	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	41800			mg/Kg	20	100	11/10/11 12:35	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/07/11 15:00	jjc
Copper, total (3050)	M6010B ICP	136		*	mg/Kg	1	5	11/11/11 1:14	jjc
Potassium, total (3050)	M6010B ICP	5090			mg/Kg	30	200	11/10/11 12:35	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.2	H	*	%	0.1	0.5	11/09/11 7:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	11/09/11 7:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.5		*	units	0.1	0.1	11/09/11 16:18	ndj
Solids, Percent	CLPSOW390, PART F, D-98	84.0		*	%	0.1	0.5	11/01/11 17:51	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 11:58	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:19	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:22	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:32	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:32	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:23	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 14:32	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.0			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.5		*	mg/Kg	0.1	0.5	11/09/11 22:19	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.45		*	mg/Kg	0.05	0.3	11/09/11 22:19	pjb

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91218-16***
Project ID:	ZN000000J8	Date Sampled:	*10/07/11 10:45*
Sample ID:	STS-AMD-2011-NEREF2	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 14:11	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8350			mg/Kg	20	100	11/10/11 12:38	aeb
Copper (1312)	M6010B ICP	0.01	B	*	mg/L	0.01	0.05	11/07/11 15:10	jjc
Copper, total (3050)	M6010B ICP	168		*	mg/Kg	1	5	11/11/11 1:17	jjc
Potassium, total (3050)	M6010B ICP	4980			mg/Kg	30	200	11/10/11 12:38	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6	H	*	%	0.1	0.5	11/09/11 8:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	11/09/11 8:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	6.9		*	units	0.1	0.1	11/09/11 16:20	ndj
Solids, Percent	CLPSOW390, PART F, D-98	82.1		*	%	0.1	0.5	11/01/11 17:52	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:02	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:20	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:24	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:35	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:35	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:24	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 14:44	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.3			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.5		*	mg/Kg	0.1	0.5	11/09/11 22:20	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.20	B	*	mg/Kg	0.05	0.3	11/09/11 22:20	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-EREF1 0

ACZ Sample ID: ***L91218-17***
Date Sampled: *10/06/11 08:55*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 14:25	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	3710			mg/Kg	20	100	11/10/11 12:41	aeb
Copper (1312)	M6010B ICP	0.07		*	mg/L	0.01	0.05	11/07/11 15:13	jjc
Copper, total (3050)	M6010B ICP	1240		*	mg/Kg	1	5	11/11/11 1:21	jjc
Potassium, total (3050)	M6010B ICP	5390			mg/Kg	30	200	11/10/11 12:41	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.8	H	*	%	0.1	0.5	11/09/11 9:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	11/09/11 9:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	4.7		*	units	0.1	0.1	11/09/11 16:21	ndj
Solids, Percent	CLPSOW390, PART F, D-98	84.1		*	%	0.1	0.5	11/01/11 17:54	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:06	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:21	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:25	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:38	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:38	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:26	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 14:55	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.9			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.1		*	mg/Kg	0.1	0.5	11/09/11 22:24	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.11	B	*	mg/Kg	0.05	0.3	11/09/11 22:24	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91218-18***
Sample ID:	STS-AMD-2011-EREF2 0	Date Sampled:	*10/06/11 08:50*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 14:39	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2550			mg/Kg	20	100	11/10/11 12:44	aeb
Copper (1312)	M6010B ICP	0.39		*	mg/L	0.01	0.05	11/07/11 15:16	jjc
Copper, total (3050)	M6010B ICP	1400		*	mg/Kg	1	5	11/11/11 1:24	jjc
Potassium, total (3050)	M6010B ICP	2720			mg/Kg	30	200	11/10/11 12:44	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.5	H	*	%	0.1	0.5	11/09/11 10:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.5		*	%	0.1	0.5	11/09/11 10:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	4.7		*	units	0.1	0.1	11/09/11 16:23	ndj
Solids, Percent	CLPSOW390, PART F, D-98	92.1		*	%	0.1	0.5	11/01/11 17:55	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:11	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:22	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:27	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:41	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:41	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:27	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 15:07	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.6			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.6		*	mg/Kg	0.1	0.5	11/09/11 22:25	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.05	0.3	11/09/11 22:25	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91218-19***
Sample ID:	STS-AMD-2011-EREF1 6	Date Sampled:	*10/06/11 09:05*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 14:53	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7020			mg/Kg	20	100	11/10/11 12:47	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/07/11 15:19	jjc
Copper, total (3050)	M6010B ICP	116		*	mg/Kg	1	5	11/11/11 1:27	jjc
Potassium, total (3050)	M6010B ICP	7320			mg/Kg	30	200	11/10/11 12:47	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.8	H	*	%	0.1	0.5	11/09/11 11:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	11/09/11 11:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	6.8		*	units	0.1	0.1	11/09/11 16:25	ndj
Solids, Percent	CLPSOW390, PART F, D-98	85.9		*	%	0.1	0.5	11/01/11 17:57	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:15	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:23	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:28	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:44	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:44	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:28	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 15:18	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	4.5			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	4.8		*	mg/Kg	0.1	0.5	11/09/11 22:26	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.27	B	*	mg/Kg	0.05	0.3	11/09/11 22:26	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-EREF2 6

ACZ Sample ID: ***L91218-20***
Date Sampled: *10/06/11 09:00*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 15:07	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	2240			mg/Kg	20	100	11/10/11 12:50	aeb
Copper (1312)	M6010B ICP	0.34		*	mg/L	0.01	0.05	11/07/11 15:22	jjc
Copper, total (3050)	M6010B ICP	964		*	mg/Kg	1	5	11/11/11 1:31	jjc
Potassium, total (3050)	M6010B ICP	3430			mg/Kg	30	200	11/10/11 12:50	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.9	H	*	%	0.1	0.5	11/09/11 12:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.9		*	%	0.1	0.5	11/09/11 12:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	4.5		*	units	0.1	0.1	11/09/11 16:28	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.1		*	%	0.1	0.5	11/01/11 17:58	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:19	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:24	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 10:30	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/07/11 16:47	thf/ndj
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/07/11 16:47	thf/ndj
Synthetic Precip. Leaching Procedure	M1312							11/02/11 12:29	lwt/brd
Water Extraction	ASA No. 9 10-2.3.2							11/09/11 15:30	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	6.9			mg/Kg	0.1	0.5	11/14/11 12:26	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	6.9		*	mg/Kg	0.1	0.5	11/09/11 22:27	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction		U	*	mg/Kg	0.05	0.3	11/09/11 22:27	pjb

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.

(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8

ACZ Project ID: ***L91218***

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313308													
WG313308ICV	ICV	11/10/11 11:07	II111012-2	100		97.86	mg/L	97.9	90	110			
WG313308ICB	ICB	11/10/11 11:10				U	mg/L		-0.6	0.6			
WG313308PQV	PQV	11/10/11 11:13	II111024-4	1		1.11	mg/L	111	70	130			
WG313308ICSAB	ICSAB	11/10/11 11:16	II110922-1	250		241.24	mg/L	96.5	80	120			
WG313154PBS	PBS	11/10/11 11:22				22	mg/Kg		-60	60			
WG313154LCSS	LCSS	11/10/11 11:25	PCN38231	6700		6794	mg/Kg		5570	7830			
WG313154LCSSD	LCSSD	11/10/11 11:28	PCN38231	6700		6716	mg/Kg		5570	7830	1.2	20	
L91218-06SDL	SDL	11/10/11 11:50			28200	28660	mg/Kg				1.6	10	
WG313308CCV1	CCV	11/10/11 11:53	II111031-1	50		49.7	mg/L	99.4	90	110			
WG313308CCB1	CCB	11/10/11 11:56				U	mg/L		-0.6	0.6			
L91218-10MS	MS	11/10/11 12:11	II111104-3	6867.73134	4680	11832	mg/Kg	104.1	75	125			
L91218-10MSD	MSD	11/10/11 12:14	II111104-3	6867.73134	4680	11567	mg/Kg	100.3	75	125	2.27	20	
WG313308CCV2	CCV	11/10/11 12:29	II111031-1	50		48.32	mg/L	96.6	90	110			
WG313308CCB2	CCB	11/10/11 12:32				.21	mg/L		-0.6	0.6			
WG313308CCV3	CCV	11/10/11 12:53	II111031-1	50		48.02	mg/L	96	90	110			
WG313308CCB3	CCB	11/10/11 12:56				U	mg/L		-0.6	0.6			

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313145													
WG313145LCSS	LCSS	11/08/11 14:30	PCN38174	4.19		4.4	%		80	120			
WG313145PBS	PBS	11/08/11 15:30				U	%		-0.3	0.3			
L91218-01DUP	DUP	11/08/11 17:30			.8	.8	%				0	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313145													
WG313145PBS	PBS	11/08/11 15:30				U	%		-0.3	0.3			
L91218-01DUP	DUP	11/08/11 17:30			1.1	.9	%				20	20	

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313038													
WG313038ICV	ICV	11/07/11 13:39	II111012-2	2		1.989	mg/L	99.5	90	110			
WG313038ICB	ICB	11/07/11 13:42				U	mg/L		-0.03	0.03			
WG313038PQV	PQV	11/07/11 13:46	II111024-4	.05		.052	mg/L	104	70	130			
WG313038ICSAB	ICSAB	11/07/11 13:49	II110922-1	.255		.254	mg/L	99.6	80	120			
WG312790PBS	PBS	11/07/11 13:55				U	mg/L		-0.03	0.03			
WG312790LFB	LFB	11/07/11 13:58	II111024-2	.5		.535	mg/L	107	85	115			
L91218-01MS	MS	11/07/11 14:04	II111024-2	.5	.12	.654	mg/L	106.8	75	125			
L91218-01MSD	MSD	11/07/11 14:07	II111024-2	.5	.12	.648	mg/L	105.6	75	125	0.92	20	
WG313038CCV1	CCV	11/07/11 14:26	II111031-1	1		.989	mg/L	98.9	90	110			
WG313038CCB1	CCB	11/07/11 14:29				U	mg/L		-0.03	0.03			
L91218-10SDL	SDL	11/07/11 14:45			.06	.06	mg/L				0	10	
WG313038CCV2	CCV	11/07/11 15:03	II111031-1	1		.993	mg/L	99.3	90	110			
WG313038CCB2	CCB	11/07/11 15:06				U	mg/L		-0.03	0.03			
L91218-20DUP	DUP	11/07/11 15:25			.34	.417	mg/L				20.3	20	RD
WG313038CCV3	CCV	11/07/11 15:28	II111031-1	1		.974	mg/L	97.4	90	110			
WG313038CCB3	CCB	11/07/11 15:31				U	mg/L		-0.03	0.03			

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313308													
WG313308ICV	ICV	11/10/11 11:07	II111012-2	2		1.98	mg/L	99	90	110			
WG313308ICB	ICB	11/10/11 11:10				U	mg/L		-0.03	0.03			
WG313308PQV	PQV	11/10/11 11:13	II111024-4	.05		.058	mg/L	116	70	130			
WG313308ICSAB	ICSAB	11/10/11 11:16	II110922-1	.255		.265	mg/L	103.9	80	120			
WG313154PBS	PBS	11/10/11 11:22				U	mg/Kg		-3	3			
WG313154LCSS	LCSS	11/10/11 11:25	PCN38231	117		118.5	mg/Kg		98	136			
WG313154LCSSD	LCSSD	11/10/11 11:28	PCN38231	117		120.8	mg/Kg		98	136	1.9	20	
L91218-06SDL	SDL	11/10/11 11:50			690	733.5	mg/Kg				6.3	10	
WG313308CCV1	CCV	11/10/11 11:53	II111031-1	1		1.012	mg/L	101.2	90	110			
WG313308CCB1	CCB	11/10/11 11:56				.025	mg/L		-0.03	0.03			
L91218-10MS	MS	11/10/11 12:11	II111104-3	50.5	847	870.7	mg/Kg	46.9	75	125			M3
L91218-10MSD	MSD	11/10/11 12:14	II111104-3	50.5	847	848.5	mg/Kg	3	75	125	2.58	20	M3
WG313308CCV3	CCV	11/10/11 12:53	II111031-1	1		1.035	mg/L	103.5	90	110			
WG313352													
WG313352ICV	ICV	11/11/11 0:04	II111012-2	2		1.957	mg/L	97.9	90	110			
WG313352ICB	ICB	11/11/11 0:07				.017	mg/L		-0.03	0.03			
WG313352PQV	PQV	11/11/11 0:10	II111024-4	.05		.061	mg/L	122	70	130			
WG313352ICSAB	ICSAB	11/11/11 0:14	II110922-1	.255		.292	mg/L	114.5	80	120			
WG313154PBS	PBS	11/11/11 0:21				3.5	mg/Kg		-3	3			BA
WG313154LCSS	LCSS	11/11/11 0:24	PCN38231	117		124.7	mg/Kg		98	136			
WG313154LCSSD	LCSSD	11/11/11 0:27	PCN38231	117		128	mg/Kg		98	136	2.6	20	
L91218-07SDL	SDL	11/11/11 0:34			316	329	mg/Kg				4.1	10	
L91218-10MS	MS	11/11/11 0:47	II111104-3	50.5	901	912.8	mg/Kg	23.4	75	125			M3
L91218-10MSD	MSD	11/11/11 0:51	II111104-3	50.5	901	909.8	mg/Kg	17.4	75	125	0.33	20	M3
WG313352CCV1	CCV	11/11/11 0:54	II111031-1	1		1.069	mg/L	106.9	90	110			
WG313352CCB1	CCB	11/11/11 0:57				.033	mg/L		-0.03	0.03			BB
WG313352CCV2	CCV	11/11/11 1:34	II111031-1	1		1.095	mg/L	109.5	90	110			
WG313352CCB2	CCB	11/11/11 1:38				.067	mg/L		-0.03	0.03			BB

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8

ACZ Project ID: ***L91218***

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313273													
WG313273ICV	ICV	11/09/11 19:58	WI111001-2	2.416		2.364	mg/L	97.8	90	110			
WG313273ICB	ICB	11/09/11 19:59				U	mg/L		-0.06	0.06			
WG313280													
WG313280CCV1	CCV	11/09/11 21:52	WI111104-1	2		2.05	mg/L	102.5	90	110			
WG313280CCB1	CCB	11/09/11 21:54				U	mg/L		-0.06	0.06			
WG313280LFB	LFB	11/09/11 21:55	WI110813-3	2		2.043	mg/Kg	102.2	90	110			
WG313224PBS	PBS	11/09/11 21:56				U	mg/Kg		-0.3	0.3			
L91218-01DUP	DUP	11/09/11 21:58			5	5.22	mg/Kg				4.3	20	
L91218-02AS	AS	11/09/11 22:01	WI110813-3	10	1.5	12.45	mg/Kg	109.5	90	110			
WG313280CCV2	CCV	11/09/11 22:07	WI111104-1	2		2.051	mg/L	102.6	90	110			
WG313280CCB2	CCB	11/09/11 22:08				U	mg/L		-0.06	0.06			
WG313280CCV3	CCV	11/09/11 22:21	WI111104-1	2		2.07	mg/L	103.5	90	110			
WG313280CCB3	CCB	11/09/11 22:22				U	mg/L		-0.06	0.06			
WG313280CCV4	CCV	11/09/11 22:30	WI111104-1	2		2.065	mg/L	103.3	90	110			
WG313280CCB4	CCB	11/09/11 22:32				U	mg/L		-0.06	0.06			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313273													
WG313273ICV	ICV	11/09/11 19:58	WI111001-2	.609		.633	mg/L	103.9	90	110			
WG313273ICB	ICB	11/09/11 19:59				U	mg/L		-0.03	0.03			
WG313280													
WG313280CCV1	CCV	11/09/11 21:52	WI111104-1	1		.986	mg/L	98.6	90	110			
WG313280CCB1	CCB	11/09/11 21:54				U	mg/L		-0.03	0.03			
WG313280LFB	LFB	11/09/11 21:55	WI110813-3	1		1.026	mg/Kg	102.6	90	110			
WG313224PBS	PBS	11/09/11 21:56				U	mg/Kg		-0.15	0.15			
L91218-01DUP	DUP	11/09/11 21:58			.13	.17	mg/Kg				26.7	20	RA
L91218-02AS	AS	11/09/11 22:01	WI110813-3	5	.18	5.725	mg/Kg	110.9	90	110			M1
WG313280CCV2	CCV	11/09/11 22:07	WI111104-1	1		.976	mg/L	97.6	90	110			
WG313280CCB2	CCB	11/09/11 22:08				U	mg/L		-0.03	0.03			
WG313280CCV3	CCV	11/09/11 22:21	WI111104-1	1		1.012	mg/L	101.2	90	110			
WG313280CCB3	CCB	11/09/11 22:22				U	mg/L		-0.03	0.03			
WG313280CCV4	CCV	11/09/11 22:30	WI111104-1	1		.992	mg/L	99.2	90	110			
WG313280CCB4	CCB	11/09/11 22:32				U	mg/L		-0.03	0.03			

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313263													
WG313263ICV	ICV	11/09/11 15:50	PCN36616	4		3.95	units	98.8	97	103			
L91218-01DUP	DUP	11/09/11 15:53			5	5	units				0	20	
WG313263CCV1	CCV	11/09/11 16:08	PCN36616	4		3.99	units	99.8	97	103			
WG313263CCV2	CCV	11/09/11 16:26	PCN36616	4		3.99	units	99.8	97	103			
WG313263CCV3	CCV	11/09/11 16:30	PCN36616	4		3.99	units	99.8	97	103			

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8

ACZ Project ID: ***L91218***

Potassium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313308													
WG313308ICV	ICV	11/10/11 11:07	II111012-2	20		20.03	mg/L	100.2	90	110			
WG313308ICB	ICB	11/10/11 11:10				U	mg/L		-0.9	0.9			
WG313308PQV	PQV	11/10/11 11:13	II111024-4	1.5		1.67	mg/L	111.3	70	130			
WG313308ICSAB	ICSAB	11/10/11 11:16	II110922-1	25		24.6	mg/L	98.4	80	120			
WG313154PBS	PBS	11/10/11 11:22				U	mg/Kg		-90	90			
WG313154LCSS	LCSS	11/10/11 11:25	PCN38231	2960		3516	mg/Kg		2170	3760			
WG313154LCSSD	LCSSD	11/10/11 11:28	PCN38231	2960		3631	mg/Kg		2170	3760	3.2	20	
L91218-06SDL	SDL	11/10/11 11:50			3740	3880	mg/Kg				3.7	10	
WG313308CCV1	CCV	11/10/11 11:53	II111031-1	10		10.13	mg/L	101.3	90	110			
WG313308CCB1	CCB	11/10/11 11:56				U	mg/L		-0.9	0.9			
L91218-10MS	MS	11/10/11 12:11	II111104-3	10097.13261	3200	13397	mg/Kg	101	75	125			
L91218-10MSD	MSD	11/10/11 12:14	II111104-3	10097.13261	3200	13142	mg/Kg	98.5	75	125	1.92	20	
WG313308CCV2	CCV	11/10/11 12:29	II111031-1	10		10	mg/L	100	90	110			
WG313308CCB2	CCB	11/10/11 12:32				U	mg/L		-0.9	0.9			
WG313308CCV3	CCV	11/10/11 12:53	II111031-1	10		10.36	mg/L	103.6	90	110			
WG313308CCB3	CCB	11/10/11 12:56				.57	mg/L		-0.9	0.9			

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG312712													
WG312712PBS	PBS	11/01/11 17:30				U	%		99.9	100.1			
L91218-20DUP	DUP	11/01/11 18:00			90.1	89.79	%				0.3	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-01	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313308	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-02	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313308	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-03	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313308	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-04	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313308	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-05	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313308	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-06	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313308	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-07	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-08	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-09	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-10	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-11	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-12	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-13	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-14	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-15	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-16	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-17	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-18	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91218-19	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91218-20	WG313038	Copper (1312)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG313352	Copper, total (3050)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313145	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG313280	Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000000J8

ACZ Project ID: L91218
Date Received: 10/12/2011 09:26
Received By: ksj
Date Printed: 10/13/2011

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
2525, 2272		12.8, 13.2	13, 14
3071		13.8	14
3374		10.6	15
2616		10	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000000J8

ACZ Project ID: L91218
Date Received: 10/12/2011 09:26
Received By: ksj
Date Printed: 10/13/2011

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L91218-01	STS-AMD-2011-E3 0-6									X		☐
L91218-02	STS-AMD-2011-E1 6-12									X		☐
L91218-03	STS-AMD-2011-E2 6-12									X		☐
L91218-04	STS-AMD-2011-E3 6-12									X		☐
L91218-05	STS-AMD-2011-WREF1 0									X		☐
L91218-06	STS-AMD-2011-WREF2 0									X		☐
L91218-07	STS-AMD-2011-WREF1 1									X		☐
L91218-08	STS-AMD-2011-WREF2 1									X		☐
L91218-09	STS-AMD-2011-NREF1 0									X		☐
L91218-10	STS-AMD-2011-NREF2 0									X		☐
L91218-11	STS-AMD-2011-NREF1 1									X		☐
L91218-12	STS-AMD-2011-NREF2 1									X		☐
L91218-13	STS-AMD-2011-NEREF1									X		☐
L91218-14	STS-AMD-2011-NEREF2									X		☐
L91218-15	STS-AMD-2011-NEREF1									X		☐
L91218-16	STS-AMD-2011-NEREF2									X		☐
L91218-17	STS-AMD-2011-EREF1 0									X		☐
L91218-18	STS-AMD-2011-EREF2 0									X		☐
L91218-19	STS-AMD-2011-EREF1 6									X		☐
L91218-20	STS-AMD-2011-EREF2 6									X		☐

Sample Container Preservation Legend

Abbreviation	**Description**	**Container Type**	**Preservative/Limits**
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc. L91218

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley	E-mail: Matthew.Barkley@arcadis-us.com
Company: ARCADIS	Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson	Address: P.O. Box 10
Company: Chino Mines Company	Bayard, NM 88023
E-mail: Pamela_Pinson@FMI.com	Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐
If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION — ANALYSES REQUESTED (attach list or use quote number)

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Carolyn Meyer
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2011-E3 0-6	10.6.11 : 09:55'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-E1 6-12	10.6.11 : 09:40'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-E2 6-12	10.6.11 : 09:35'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-E3 6-12	10.6.11 : 10:15'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-WREF1 0-6	10.4.11 : 09:30'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-WREF2 0-6	10.4.11 : 09:55'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-WREF1 12-18	10.4.11 : 10:26'	SO	1	✗	✗	✗	✗	✗	✗	✗	
STS-AMD-2011-WREF2 18-24	10.4.11 : 10:40'	SO	1	✗	✗	✗	✗	✗	✗	✗	
TS-AMD-2011-NREF1 0-6	10.5.11 : 10:00'	SO	1	✗	✗	✗	✗	✗	✗	✗	
TS-AMD-2011-NREF2 0-6	10.5.11 : 10:50'	SO	1	✗	✗	✗	✗	✗	✗	✗	

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

lease send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a ry weight basis.

Methods:

H - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Pam Pinson	10-10-11 3:00PM		
		10-12-11	9:25

①

L91218 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L91218

CHAIN of CUSTODY

Report to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to:

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to:

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Carolyn Meyer
Are any samples NRC licensable material? Yes No

ANALYSES REQUESTED

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2011-NREF1 18-24	10.5.11 : 10:50'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NREF2 18-24	10.5.11 : 11:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NEREF1 0-6	10.7.11 : 10:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NEREF2 0-6	10.7.11 : 10:05'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NEREF1 18-24	10.7.11 : 11:05'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NEREF2 12-18	10.7.11 : 10:45'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-EREF1 0-6	10.6.11 : 08:55'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-EREF2 0-6	10.6.11 : 08:50'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-EREF1 6-12	10.6.11 : 09:05'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-EREF2 6-12	10.6.11 : 09:00'	SO	1	x	x	x	x	x	x	x	

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY	DATE:TIME
Pam Pinson	3:00pm 10-10-11		10.12.11 9:25

2

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 14, 2011

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Sheri Fling, Matthew Barkley

Project ID: ZN000000J8
ACZ Project ID: L91220

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 12, 2011. This project has been assigned to ACZ's project number, L91220. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L91220. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 14, 2011. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-01***
Project ID:	ZN000000J8	Date Sampled:	*10/04/11 08:20*
Sample ID:	STS-AMD-2011-W1 0-6	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 15:55	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8620			mg/Kg	20	100	11/10/11 13:50	aeb
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/07/11 18:39	aeb
Copper, total (3050)	M6010B ICP	880		*	mg/Kg	1	5	11/10/11 13:50	aeb
Potassium, total (3050)	M6010B ICP	4380			mg/Kg	30	200	11/10/11 13:50	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6	H	*	%	0.1	0.5	11/09/11 14:35	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	11/09/11 14:35	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/10/11 8:43	ndj
Solids, Percent	CLPSOW390, PART F, D-98	91.1		*	%	0.1	0.5	11/01/11 17:01	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:40	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:03	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 11:00	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 7:49	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 7:49	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:38	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.5			mg/Kg	0.1	0.5	11/14/11 12:34	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.8		*	mg/Kg	0.1	0.5	11/10/11 22:28	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	11/10/11 22:28	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-W2 0-6

ACZ Sample ID: ***L91220-02***
Date Sampled: *10/04/11 09:23*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 16:33	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8500			mg/Kg	20	100	11/10/11 13:53	aeb
Copper (1312)	M6010B ICP	0.06		*	mg/L	0.01	0.05	11/07/11 18:48	aeb
Copper, total (3050)	M6010B ICP	2440		*	mg/Kg	1	5	11/10/11 13:53	aeb
Potassium, total (3050)	M6010B ICP	3470			mg/Kg	30	200	11/10/11 13:53	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.0	H	*	%	0.1	0.5	11/09/11 16:40	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	11/09/11 16:40	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/10/11 8:50	ndj
Solids, Percent	CLPSOW390, PART F, D-98	93.2		*	%	0.1	0.5	11/01/11 17:03	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:44	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:04	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 11:18	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 8:02	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 8:02	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:43	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.4			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.7		*	mg/Kg	0.1	0.5	11/10/11 22:30	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.21	B	*	mg/Kg	0.05	0.3	11/10/11 22:30	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91220-03***
Sample ID:	STS-AMD-2011-W3 0-6	Date Sampled:	*10/04/11 09:05*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 16:46	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8160			mg/Kg	20	100	11/10/11 13:56	aeb
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/07/11 18:52	aeb
Copper, total (3050)	M6010B ICP	761		*	mg/Kg	1	5	11/10/11 13:56	aeb
Potassium, total (3050)	M6010B ICP	4110			mg/Kg	30	200	11/10/11 13:56	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.5	H	*	%	0.1	0.5	11/09/11 17:43	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.4		*	%	0.1	0.5	11/09/11 17:43	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/10/11 8:53	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.3		*	%	0.1	0.5	11/01/11 17:05	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:48	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:05	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 11:27	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 8:14	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 8:14	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:44	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	0.8			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.0		*	mg/Kg	0.1	0.5	11/10/11 22:33	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.20	B	*	mg/Kg	0.05	0.3	11/10/11 22:33	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91220-04***
Sample ID:	STS-AMD-2011-W1 6-12	Date Sampled:	*10/04/11 08:30*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 16:58	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	33900			mg/Kg	20	100	11/10/11 13:59	aeb
Copper (1312)	M6010B ICP	0.01	B	*	mg/L	0.01	0.05	11/07/11 18:55	aeb
Copper, total (3050)	M6010B ICP	249		*	mg/Kg	1	5	11/10/11 13:59	aeb
Potassium, total (3050)	M6010B ICP	5230			mg/Kg	30	200	11/10/11 13:59	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	3.7	H	*	%	0.1	0.5	11/09/11 18:46	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.2		*	%	0.1	0.5	11/09/11 18:46	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.8		*	units	0.1	0.1	11/10/11 8:56	ndj
Solids, Percent	CLPSOW390, PART F, D-98	89.9		*	%	0.1	0.5	11/01/11 17:07	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:52	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:06	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 11:36	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 8:26	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 8:26	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:45	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.0			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.3		*	mg/Kg	0.1	0.5	11/10/11 22:34	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.23	B	*	mg/Kg	0.05	0.3	11/10/11 22:34	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91220-05***
Sample ID:	STS-AMD-2011-W2 12-1	Date Sampled:	*10/04/11 09:41*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 17:11	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	107000		*	mg/Kg	200	1000	11/11/11 11:51	jjc
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/07/11 18:58	aeb
Copper, total (3050)	M6010B ICP	264		*	mg/Kg	1	5	11/10/11 14:02	aeb
Potassium, total (3050)	M6010B ICP	3530			mg/Kg	30	200	11/10/11 14:02	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	4.9	H	*	%	0.1	0.5	11/09/11 19:49	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.7		*	%	0.1	0.5	11/09/11 19:49	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/10/11 9:00	ndj
Solids, Percent	CLPSOW390, PART F, D-98	91.9		*	%	0.1	0.5	11/01/11 17:09	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 12:57	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:07	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 11:45	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 8:39	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 8:39	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:47	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	3.0			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.2		*	mg/Kg	0.1	0.5	11/10/11 22:35	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.17	B	*	mg/Kg	0.05	0.3	11/10/11 22:35	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-06***
Project ID:	ZN000000J8	Date Sampled:	*10/04/11 09:20*
Sample ID:	STS-AMD-2011-W3 12-1	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 17:24	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	59400			mg/Kg	20	100	11/10/11 14:05	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/07/11 19:01	aeb
Copper, total (3050)	M6010B ICP	253		*	mg/Kg	1	5	11/10/11 14:05	aeb
Potassium, total (3050)	M6010B ICP	4190			mg/Kg	30	200	11/10/11 14:05	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	4.0	H	*	%	0.1	0.5	11/09/11 20:51	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	11/09/11 20:51	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.7		*	units	0.1	0.1	11/10/11 9:03	ndj
Solids, Percent	CLPSOW390, PART F, D-98	88.9		*	%	0.1	0.5	11/01/11 17:11	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:01	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:08	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 11:54	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 8:51	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 8:51	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:48	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.0			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.2		*	mg/Kg	0.1	0.5	11/10/11 22:36	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.19	B	*	mg/Kg	0.05	0.3	11/10/11 22:36	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-07***
Project ID:	ZN000000J8	Date Sampled:	*10/05/11 08:45*
Sample ID:	STS-AMD-2011-N1 0-6	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 17:37	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10000			mg/Kg	20	100	11/10/11 14:08	aeb
Copper (1312)	M6010B ICP	0.33		*	mg/L	0.01	0.05	11/07/11 19:10	aeb
Copper, total (3050)	M6010B ICP	2320		*	mg/Kg	1	5	11/10/11 14:08	aeb
Potassium, total (3050)	M6010B ICP	3730			mg/Kg	30	200	11/10/11 14:08	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.9	H	*	%	0.1	0.5	11/09/11 21:54	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.8		*	%	0.1	0.5	11/09/11 21:54	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.4		*	units	0.1	0.1	11/10/11 9:06	ndj
Solids, Percent	CLPSOW390, PART F, D-98	90.8		*	%	0.1	0.5	11/01/11 17:13	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:05	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:09	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:03	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 9:04	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 9:04	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:51	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	43.7			mg/Kg	0.4	2	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	43.8		*	mg/Kg	0.4	2	11/10/11 23:10	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.14	B	*	mg/Kg	0.05	0.3	11/10/11 22:40	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-N2 0-6

ACZ Sample ID: ***L91220-08***
Date Sampled: *10/05/11 08:50*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 17:49	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9650			mg/Kg	20	100	11/10/11 14:17	aeb
Copper (1312)	M6010B ICP	0.18		*	mg/L	0.01	0.05	11/07/11 19:16	aeb
Copper, total (3050)	M6010B ICP	1080		*	mg/Kg	1	5	11/10/11 14:17	aeb
Potassium, total (3050)	M6010B ICP	3070			mg/Kg	30	200	11/10/11 14:17	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.4	H	*	%	0.1	0.5	11/09/11 22:57	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.3		*	%	0.1	0.5	11/09/11 22:57	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.9		*	units	0.1	0.1	11/10/11 9:10	ndj
Solids, Percent	CLPSOW390, PART F, D-98	93.7		*	%	0.1	0.5	11/01/11 17:15	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:09	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:10	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:12	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 9:16	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 9:16	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:53	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	18.1			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	18.2		*	mg/Kg	0.1	0.5	11/10/11 22:41	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.15	B	*	mg/Kg	0.05	0.3	11/10/11 22:41	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-09***
Project ID:	ZN000000J8	Date Sampled:	*10/05/11 08:50*
Sample ID:	STS-AMD-2011-N3 0-6	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 18:02	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7500			mg/Kg	20	100	11/10/11 14:20	aeb
Copper (1312)	M6010B ICP	0.15		*	mg/L	0.01	0.05	11/07/11 19:19	aeb
Copper, total (3050)	M6010B ICP	990		*	mg/Kg	1	5	11/10/11 14:20	aeb
Potassium, total (3050)	M6010B ICP	3140			mg/Kg	30	200	11/10/11 14:20	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/10/11 0:00	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	11/10/11 0:00	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	11/10/11 9:13	ndj
Solids, Percent	CLPSOW390, PART F, D-98	93.5		*	%	0.1	0.5	11/01/11 17:17	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:13	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:11	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:21	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 9:29	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 9:29	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:54	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	21.9			mg/Kg	0.3	2	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	22.1		*	mg/Kg	0.3	2	11/10/11 23:11	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.16	B	*	mg/Kg	0.05	0.3	11/10/11 22:42	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-10***
Project ID:	ZN000000J8	Date Sampled:	*10/05/11 09:10*
Sample ID:	STS-AMD-2011-N1 18-2	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 18:15	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	14700			mg/Kg	20	100	11/10/11 14:23	aeb
Copper (1312)	M6010B ICP	0.05		*	mg/L	0.01	0.05	11/07/11 19:22	aeb
Copper, total (3050)	M6010B ICP	640		*	mg/Kg	1	5	11/10/11 14:23	aeb
Potassium, total (3050)	M6010B ICP	3210			mg/Kg	30	200	11/10/11 14:23	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.0	H	*	%	0.1	0.5	11/10/11 1:02	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	11/10/11 1:02	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.4		*	units	0.1	0.1	11/10/11 9:20	ndj
Solids, Percent	CLPSOW390, PART F, D-98	86.8		*	%	0.1	0.5	11/01/11 17:19	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:18	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:12	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:30	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 9:41	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 9:41	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:56	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	4.7			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.0		*	mg/Kg	0.1	0.5	11/10/11 22:43	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.29	B	*	mg/Kg	0.05	0.3	11/10/11 22:43	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-11***
Project ID:	ZN000000J8	Date Sampled:	*10/05/11 09:40*
Sample ID:	STS-AMD-2011-N2 18-2	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 18:27	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	10700			mg/Kg	20	100	11/10/11 14:29	aeb
Copper (1312)	M6010B ICP	0.03	B	*	mg/L	0.01	0.05	11/07/11 19:25	aeb
Copper, total (3050)	M6010B ICP	91		*	mg/Kg	1	5	11/10/11 14:29	aeb
Potassium, total (3050)	M6010B ICP	2390			mg/Kg	30	200	11/10/11 14:29	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.7	H	*	%	0.1	0.5	11/10/11 2:05	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/10/11 2:05	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	11/10/11 9:23	ndj
Solids, Percent	CLPSOW390, PART F, D-98	87.5		*	%	0.1	0.5	11/01/11 17:20	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:22	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:13	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:39	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 9:53	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 9:53	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:57	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.7			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	3.0		*	mg/Kg	0.1	0.5	11/10/11 22:44	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.26	B	*	mg/Kg	0.05	0.3	11/10/11 22:44	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-N3 18-2

ACZ Sample ID: ***L91220-12***
Date Sampled: *10/05/11 10:07*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 18:40	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	9960			mg/Kg	20	100	11/10/11 14:32	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/07/11 19:28	aeb
Copper, total (3050)	M6010B ICP	59		*	mg/Kg	1	5	11/10/11 14:32	aeb
Potassium, total (3050)	M6010B ICP	2740			mg/Kg	30	200	11/10/11 14:32	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1	H	*	%	0.1	0.5	11/10/11 3:08	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.0		*	%	0.1	0.5	11/10/11 3:08	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/10/11 9:26	ndj
Solids, Percent	CLPSOW390, PART F, D-98	91.1		*	%	0.1	0.5	11/01/11 17:22	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:26	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:14	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:48	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 10:06	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 10:06	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 13:59	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.6			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.9		*	mg/Kg	0.1	0.5	11/10/11 22:46	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.24	B	*	mg/Kg	0.05	0.3	11/10/11 22:46	pjb

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NE1 0-6

ACZ Sample ID: ***L91220-13***
Date Sampled: *10/07/11 08:40*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 18:53	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6820			mg/Kg	20	100	11/10/11 14:35	aeb
Copper (1312)	M6010B ICP	0.34		*	mg/L	0.01	0.05	11/07/11 19:31	aeb
Copper, total (3050)	M6010B ICP	3770		*	mg/Kg	1	5	11/10/11 14:35	aeb
Potassium, total (3050)	M6010B ICP	4300			mg/Kg	30	200	11/10/11 14:35	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	2.4	H	*	%	0.1	0.5	11/10/11 4:11	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	2.1		*	%	0.1	0.5	11/10/11 4:11	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.5		*	units	0.1	0.1	11/10/11 9:30	ndj
Solids, Percent	CLPSOW390, PART F, D-98	84.0		*	%	0.1	0.5	11/01/11 17:24	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:30	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:15	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 12:57	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 10:18	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 10:18	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:00	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	16.0			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	16.1		*	mg/Kg	0.1	0.5	11/10/11 22:47	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	11/10/11 22:47	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91220-14***
Sample ID:	STS-AMD-2011-NE2 0-6	Date Sampled:	*10/07/11 08:35*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 19:05	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5670			mg/Kg	20	100	11/10/11 14:38	aeb
Copper (1312)	M6010B ICP	0.15		*	mg/L	0.01	0.05	11/07/11 19:34	aeb
Copper, total (3050)	M6010B ICP	2310		*	mg/Kg	1	5	11/10/11 14:38	aeb
Potassium, total (3050)	M6010B ICP	4150			mg/Kg	30	200	11/10/11 14:38	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/10/11 5:13	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	11/10/11 5:13	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.4		*	units	0.1	0.1	11/10/11 9:33	ndj
Solids, Percent	CLPSOW390, PART F, D-98	89.5		*	%	0.1	0.5	11/01/11 17:26	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:34	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:16	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 13:06	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 10:31	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 10:31	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:01	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	4.8			mg/Kg	0.1	0.5	11/14/11 12:35	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	5.0		*	mg/Kg	0.1	0.5	11/10/11 22:48	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.17	B	*	mg/Kg	0.05	0.3	11/10/11 22:48	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NE3 0-6

ACZ Sample ID: ***L91220-15***
Date Sampled: *10/07/11 08:56*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 19:18	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	5270			mg/Kg	20	100	11/10/11 14:41	aeb
Copper (1312)	M6010B ICP	0.21		*	mg/L	0.01	0.05	11/07/11 19:37	aeb
Copper, total (3050)	M6010B ICP	2330		*	mg/Kg	1	5	11/10/11 14:41	aeb
Potassium, total (3050)	M6010B ICP	4880			mg/Kg	30	200	11/10/11 14:41	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.6	H	*	%	0.1	0.5	11/10/11 6:16	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.6		*	%	0.1	0.5	11/10/11 6:16	bsu
pH, Saturated Paste	USDA No. 60 (21A)	5.8		*	units	0.1	0.1	11/10/11 9:36	ndj
Solids, Percent	CLPSOW390, PART F, D-98	91.0		*	%	0.1	0.5	11/01/11 17:28	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:38	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:17	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 13:15	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 10:43	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 10:43	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:03	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	13.6			mg/Kg	0.1	0.5	11/14/11 12:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	13.7		*	mg/Kg	0.1	0.5	11/10/11 22:49	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.13	B	*	mg/Kg	0.05	0.3	11/10/11 22:49	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-16***
Project ID:	ZN000000J8	Date Sampled:	*10/07/11 08:55*
Sample ID:	STS-AMD-2011-NE1 18-	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 19:31	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	7760			mg/Kg	20	100	11/10/11 14:44	aeb
Copper (1312)	M6010B ICP	0.05		*	mg/L	0.01	0.05	11/07/11 19:47	aeb
Copper, total (3050)	M6010B ICP	105		*	mg/Kg	1	5	11/10/11 14:44	aeb
Potassium, total (3050)	M6010B ICP	3180			mg/Kg	30	200	11/10/11 14:44	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.8	H	*	%	0.1	0.5	11/10/11 7:19	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.7		*	%	0.1	0.5	11/10/11 7:19	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/10/11 9:40	ndj
Solids, Percent	CLPSOW390, PART F, D-98	88.9		*	%	0.1	0.5	11/01/11 17:30	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:43	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:18	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 13:24	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 10:55	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 10:55	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:04	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	2.0			mg/Kg	0.1	0.5	11/14/11 12:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.2		*	mg/Kg	0.1	0.5	11/10/11 22:50	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.16	B	*	mg/Kg	0.05	0.3	11/10/11 22:50	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L91220-17***
Project ID:	ZN000000J8	Date Sampled:	*10/07/11 09:20*
Sample ID:	STS-AMD-2011-NE2 18-	Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 19:44	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8530			mg/Kg	20	100	11/10/11 14:53	aeb
Copper (1312)	M6010B ICP	0.01	B	*	mg/L	0.01	0.05	11/07/11 19:50	aeb
Copper, total (3050)	M6010B ICP	121		*	mg/Kg	1	5	11/10/11 14:53	aeb
Potassium, total (3050)	M6010B ICP	4640			mg/Kg	30	200	11/10/11 14:53	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.1	H	*	%	0.1	0.5	11/10/11 8:21	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/10/11 8:21	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.3		*	units	0.1	0.1	11/10/11 9:43	ndj
Solids, Percent	CLPSOW390, PART F, D-98	84.8		*	%	0.1	0.5	11/01/11 17:32	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:47	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:19	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 13:33	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 11:08	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 11:08	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:07	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.8			mg/Kg	0.1	0.5	11/14/11 12:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	2.1		*	mg/Kg	0.1	0.5	11/10/11 22:54	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.30	B	*	mg/Kg	0.05	0.3	11/10/11 22:54	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NE3 18-

ACZ Sample ID: ***L91220-18***
Date Sampled: *10/07/11 09:00*
Date Received: *10/12/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 19:56	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	8000			mg/Kg	20	100	11/10/11 14:56	aeb
Copper (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	11/07/11 19:53	aeb
Copper, total (3050)	M6010B ICP	26		*	mg/Kg	1	5	11/11/11 11:54	jjc
Potassium, total (3050)	M6010B ICP	5680			mg/Kg	30	200	11/10/11 14:56	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.9	H	*	%	0.1	0.5	11/10/11 9:24	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.8		*	%	0.1	0.5	11/10/11 9:24	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.1		*	units	0.1	0.1	11/10/11 9:46	ndj
Solids, Percent	CLPSOW390, PART F, D-98	83.4		*	%	0.1	0.5	11/01/11 17:34	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:51	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:20	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 13:42	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 11:20	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 11:20	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:09	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	1.4			mg/Kg	0.1	0.5	11/14/11 12:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	1.6		*	mg/Kg	0.1	0.5	11/10/11 22:55	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.17	B	*	mg/Kg	0.05	0.3	11/10/11 22:55	pjb

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L91220-19***
Sample ID:	STS-AMD-2011-E1 0-6	Date Sampled:	*10/06/11 09:20*
		Date Received:	*10/12/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 20:09	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	6030			mg/Kg	20	100	11/10/11 14:59	aeb
Copper (1312)	M6010B ICP	0.02	B	*	mg/L	0.01	0.05	11/07/11 19:56	aeb
Copper, total (3050)	M6010B ICP	495		*	mg/Kg	1	5	11/10/11 14:59	aeb
Potassium, total (3050)	M6010B ICP	5190			mg/Kg	30	200	11/10/11 14:59	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.2	H	*	%	0.1	0.5	11/10/11 10:27	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.1		*	%	0.1	0.5	11/10/11 10:27	bsu
pH, Saturated Paste	USDA No. 60 (21A)	7.2		*	units	0.1	0.1	11/10/11 9:50	ndj
Solids, Percent	CLPSOW390, PART F, D-98	83.0		*	%	0.1	0.5	11/01/11 17:36	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:55	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:21	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 13:51	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 11:33	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 11:33	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:10	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	4.1			mg/Kg	0.1	0.5	11/14/11 12:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	4.4		*	mg/Kg	0.1	0.5	11/10/11 22:56	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.30	B	*	mg/Kg	0.05	0.3	11/10/11 22:56	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8
Sample ID:	STS-AMD-2011-E2 0-6

ACZ Sample ID:	***L91220-20***
Date Sampled:	*10/06/11 09:15*
Date Received:	*10/12/11*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							11/04/11 20:22	aeb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, total (3050)	M6010B ICP	3910			mg/Kg	20	100	11/10/11 15:02	aeb
Copper (1312)	M6010B ICP	0.20		*	mg/L	0.01	0.05	11/07/11 19:59	aeb
Copper, total (3050)	M6010B ICP	1030		*	mg/Kg	1	5	11/10/11 15:02	aeb
Potassium, total (3050)	M6010B ICP	3260			mg/Kg	30	200	11/10/11 15:02	aeb

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1.3	H	*	%	0.1	0.5	11/10/11 11:30	bsu
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1.2		*	%	0.1	0.5	11/10/11 11:30	bsu
pH, Saturated Paste	USDA No. 60 (21A)	6.4		*	units	0.1	0.1	11/10/11 9:56	ndj
Solids, Percent	CLPSOW390, PART F, D-98	95.0		*	%	0.1	0.5	11/01/11 17:38	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/01/11 13:59	lwt
Digestion - Hot Plate	M3050B ICP							11/09/11 7:22	lwt
Saturated Paste Extraction	USDA No. 60 (2)							11/09/11 14:00	ndj
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/08/11 11:45	lwt
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/08/11 11:45	lwt
Synthetic Precip. Leaching Procedure	M1312							11/03/11 14:12	lwt/ndj
Water Extraction	ASA No. 9 10-2.3.2							11/10/11 11:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrate as N, soluble (Water)	Calculation: NO3NO2 minus NO2	43.0			mg/Kg	0.4	2	11/14/11 12:36	calc
Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	43.1		*	mg/Kg	0.4	2	11/10/11 23:12	pjb
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	0.09	B	*	mg/Kg	0.05	0.3	11/10/11 22:58	pjb

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Calcium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313324													
WG313324ICV	ICV	11/10/11 13:25	II111012-2	100		97.84	mg/L	97.8	90	110			
WG313324ICB	ICB	11/10/11 13:28				U	mg/L		-0.6	0.6			
WG313324PQV	PQV	11/10/11 13:31	II111024-4	1		1.11	mg/L	111	70	130			
WG313324ICSAB	ICSAB	11/10/11 13:35	II110922-1	250		239.77	mg/L	95.9	80	120			
WG313156PBS	PBS	11/10/11 13:41				U	mg/Kg		-60	60			
WG313156LCSS	LCSS	11/10/11 13:44	PCN38231	6700		6975	mg/Kg		5570	7830			
WG313156LCSSD	LCSSD	11/10/11 13:47	PCN38231	6700		6864	mg/Kg		5570	7830	1.6	20	
WG313324CCV1	CCV	11/10/11 14:11	II111031-1	50		48.62	mg/L	97.2	90	110			
WG313324CCB1	CCB	11/10/11 14:14				.34	mg/L		-0.6	0.6			
L91220-10SDL	SDL	11/10/11 14:26			14700	14815	mg/Kg				0.8	10	
WG313324CCV2	CCV	11/10/11 14:47	II111031-1	50		47.32	mg/L	94.6	90	110			
WG313324CCB2	CCB	11/10/11 14:50				U	mg/L		-0.6	0.6			
L91220-20MS	MS	11/10/11 15:05	II111104-3	6867.73134	3910	10902	mg/Kg	101.8	75	125			
L91220-20MSD	MSD	11/10/11 15:08	II111104-3	6867.73134	3910	10573	mg/Kg	97	75	125	3.06	20	
WG313324CCV3	CCV	11/10/11 15:11	II111031-1	50		46.24	mg/L	92.5	90	110			
WG313324CCB3	CCB	11/10/11 15:14				U	mg/L		-0.6	0.6			
WG313367													
WG313367ICV	ICV	11/11/11 11:27	II111012-2	100		99.17	mg/L	99.2	90	110			
WG313367ICB	ICB	11/11/11 11:30				U	mg/L		-0.6	0.6			
WG313367PQV	PQV	11/11/11 11:33	II111024-4	1		1.07	mg/L	107	70	130			
WG313367ICSAB	ICSAB	11/11/11 11:36	II110922-1	250		247.6	mg/L	99	80	120			
WG313156PBS	PBS	11/11/11 11:42				U	mg/Kg		-60	60			
WG313156LCSS	LCSS	11/11/11 11:45	PCN38231	6700		6733	mg/Kg		5570	7830			
WG313156LCSSD	LCSSD	11/11/11 11:48	PCN38231	6700		6717	mg/Kg		5570	7830	0.2	20	
L91220-18SDL	SDL	11/11/11 11:57			7230	8470	mg/Kg				17.2	10	ZH
L91220-20MS	MS	11/11/11 12:03	II111104-3	6867.73134	3590	10020	mg/Kg	93.6	75	125			
L91220-20MSD	MSD	11/11/11 12:06	II111104-3	6867.73134	3590	9630	mg/Kg	87.9	75	125	3.97	20	
WG313367CCV1	CCV	11/11/11 12:09	II111031-1	50		49.8	mg/L	99.6	90	110			
WG313367CCB1	CCB	11/11/11 12:12				U	mg/L		-0.6	0.6			

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313218													
WG313218PBS	PBS	11/09/11 12:30				U	%		-0.3	0.3			
WG313218LCSS	LCSS	11/09/11 13:32	PCN38174	4.19		4.3	%		80	120			
L91220-01DUP	DUP	11/09/11 15:38			1.6	1.6	%				0	20	

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313218													
WG313218PBS	PBS	11/09/11 12:30				U	%		-0.3	0.3			
L91220-01DUP	DUP	11/09/11 15:38			1.6	1.5	%				6.5	20	

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8

ACZ Project ID: ***L91220***

Copper (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313042													
WG313042ICV	ICV	11/07/11 18:18	II111012-2	2		1.999	mg/L	100	90	110			
WG313042ICB	ICB	11/07/11 18:21				U	mg/L		-0.03	0.03			
WG313042PQV	PQV	11/07/11 18:24	II111024-4	.05		.052	mg/L	104	70	130			
WG313042ICSAB	ICSAB	11/07/11 18:27	II110922-1	.255		.263	mg/L	103.1	80	120			
WG312885PBS	PBS	11/07/11 18:33				U	mg/L		-0.03	0.03			
WG312885LFB	LFB	11/07/11 18:36	II111024-2	.5		.529	mg/L	105.8	85	115			
L91220-01MS	MS	11/07/11 18:42	II111024-2	.5	.03	.55	mg/L	104	75	125			
L91220-01MSD	MSD	11/07/11 18:45	II111024-2	.5	.03	.561	mg/L	106.2	75	125	1.98	20	
WG313042CCV1	CCV	11/07/11 19:04	II111031-1	1		1.008	mg/L	100.8	90	110			
WG313042CCB1	CCB	11/07/11 19:07				U	mg/L		-0.03	0.03			
L91220-07SDL	SDL	11/07/11 19:13			.33	.365	mg/L				10.6	10	ZG
WG313042CCV2	CCV	11/07/11 19:41	II111031-1	1		1	mg/L	100	90	110			
WG313042CCB2	CCB	11/07/11 19:44				U	mg/L		-0.03	0.03			
L91220-20DUP	DUP	11/07/11 20:02			.2	.218	mg/L				8.6	20	
WG313042CCV3	CCV	11/07/11 20:05	II111031-1	1		1.013	mg/L	101.3	90	110			
WG313042CCB3	CCB	11/07/11 20:08				U	mg/L		-0.03	0.03			

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313324													
WG313324ICV	ICV	11/10/11 13:25	II111012-2	2		1.996	mg/L	99.8	90	110			
WG313324ICB	ICB	11/10/11 13:28				U	mg/L		-0.03	0.03			
WG313324PQV	PQV	11/10/11 13:31	II111024-4	.05		.045	mg/L	90	70	130			
WG313324ICSAB	ICSAB	11/10/11 13:35	II110922-1	.255		.257	mg/L	100.8	80	120			
WG313156PBS	PBS	11/10/11 13:41				U	mg/Kg		-3	3			
WG313156LCSS	LCSS	11/10/11 13:44	PCN38231	117		125.4	mg/Kg		98	136			
WG313156LCSSD	LCSSD	11/10/11 13:47	PCN38231	117		124	mg/Kg		98	136	1.1	20	
WG313324CCV1	CCV	11/10/11 14:11	II111031-1	1		1.042	mg/L	104.2	90	110			
WG313324CCB1	CCB	11/10/11 14:14				.035	mg/L		-0.03	0.03			BB
L91220-10SDL	SDL	11/10/11 14:26			640	684	mg/Kg				6.9	10	
WG313324CCV2	CCV	11/10/11 14:47	II111031-1	1		1.038	mg/L	103.8	90	110			
WG313324CCB2	CCB	11/10/11 14:50				.052	mg/L		-0.03	0.03			BB
L91220-20MS	MS	11/10/11 15:05	II111104-3	50.5	1030	1017.5	mg/Kg	-24.8	75	125			M3
L91220-20MSD	MSD	11/10/11 15:08	II111104-3	50.5	1030	1116.9	mg/Kg	172.1	75	125	9.31	20	M3
WG313324CCV3	CCV	11/10/11 15:11	II111031-1	1		1.024	mg/L	102.4	90	110			
WG313324CCB3	CCB	11/10/11 15:14				.046	mg/L		-0.03	0.03			BB
WG313367													
WG313367ICV	ICV	11/11/11 11:27	II111012-2	2		1.995	mg/L	99.8	90	110			
WG313367ICB	ICB	11/11/11 11:30				U	mg/L		-0.03	0.03			
WG313367PQV	PQV	11/11/11 11:33	II111024-4	.05		.058	mg/L	116	70	130			
WG313367ICSAB	ICSAB	11/11/11 11:36	II110922-1	.255		.253	mg/L	99.2	80	120			
WG313156PBS	PBS	11/11/11 11:42				U	mg/Kg		-3	3			
WG313156LCSS	LCSS	11/11/11 11:45	PCN38231	117		113.9	mg/Kg		98	136			
WG313156LCSSD	LCSSD	11/11/11 11:48	PCN38231	117		114.4	mg/Kg		98	136	0.4	20	
L91220-18SDL	SDL	11/11/11 11:57			26	32	mg/Kg				23.1	10	ZG
L91220-20MS	MS	11/11/11 12:03	II111104-3	50.5	948	938.9	mg/Kg	-18	75	125			M3
L91220-20MSD	MSD	11/11/11 12:06	II111104-3	50.5	948	1030.2	mg/Kg	162.8	75	125	9.27	20	M3
WG313367CCV1	CCV	11/11/11 12:09	II111031-1	1		1	mg/L	100	90	110			
WG313367CCB1	CCB	11/11/11 12:12				U	mg/L		-0.03	0.03			

Inorganic QC Summary

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8

ACZ Project ID: ***L91220***

Nitrate/Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313380													
WG313380ICV	ICV	11/10/11 19:55	WI111001-2	2.416		2.371	mg/L	98.1	90	110			
WG313380ICB	ICB	11/10/11 19:56				U	mg/L		-0.06	0.06			
WG313384													
WG313384CCV1	CCV	11/10/11 22:23	WI111104-1	2		2.057	mg/L	102.9	90	110			
WG313384CCB1	CCB	11/10/11 22:24				U	mg/L		-0.06	0.06			
WG313384LFB	LFB	11/10/11 22:25	WI110813-3	2		1.977	mg/Kg	98.9	90	110			
WG313335PBS	PBS	11/10/11 22:27				U	mg/Kg		-0.3	0.3			
L91220-01DUP	DUP	11/10/11 22:29			.8	2.78	mg/Kg				110.6	20	RA
L91220-02AS	AS	11/10/11 22:31	WI110813-3	10	1.7	13.82	mg/Kg	121.2	90	110			M1
WG313384CCV2	CCV	11/10/11 22:37	WI111104-1	2		2.032	mg/L	101.6	90	110			
WG313384CCB2	CCB	11/10/11 22:39				U	mg/L		-0.06	0.06			
WG313384CCV3	CCV	11/10/11 22:52	WI111104-1	2		2.04	mg/L	102	90	110			
WG313384CCB3	CCB	11/10/11 22:53				U	mg/L		-0.06	0.06			
WG313384CCV4	CCV	11/10/11 23:01	WI111104-1	2		2.039	mg/L	102	90	110			
WG313384CCB4	CCB	11/10/11 23:02				U	mg/L		-0.06	0.06			
WG313384CCV5	CCV	11/10/11 23:08	WI111104-1	2		2.046	mg/L	102.3	90	110			
WG313384CCB5	CCB	11/10/11 23:09				U	mg/L		-0.06	0.06			
WG313384CCV6	CCV	11/10/11 23:16	WI111104-1	2		2.035	mg/L	101.8	90	110			
WG313384CCB6	CCB	11/10/11 23:17				U	mg/L		-0.06	0.06			

Nitrite as N, soluble (Water) M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313380													
WG313380ICV	ICV	11/10/11 19:55	WI111001-2	.609		.651	mg/L	106.9	90	110			
WG313380ICB	ICB	11/10/11 19:56				U	mg/L		-0.03	0.03			
WG313384													
WG313384CCV1	CCV	11/10/11 22:23	WI111104-1	1		.955	mg/L	95.5	90	110			
WG313384CCB1	CCB	11/10/11 22:24				U	mg/L		-0.03	0.03			
WG313384LFB	LFB	11/10/11 22:25	WI110813-3	1		.995	mg/Kg	99.5	90	110			
WG313335PBS	PBS	11/10/11 22:27				U	mg/Kg		-0.15	0.15			
L91220-01DUP	DUP	11/10/11 22:29			.21	.195	mg/Kg				7.4	20	RA
L91220-02AS	AS	11/10/11 22:31	WI110813-3	5	.21	5.501	mg/Kg	105.8	90	110			
WG313384CCV2	CCV	11/10/11 22:37	WI111104-1	1		.959	mg/L	95.9	90	110			
WG313384CCB2	CCB	11/10/11 22:39				U	mg/L		-0.03	0.03			
WG313384CCV3	CCV	11/10/11 22:52	WI111104-1	1		.959	mg/L	95.9	90	110			
WG313384CCB3	CCB	11/10/11 22:53				U	mg/L		-0.03	0.03			
WG313384CCV4	CCV	11/10/11 23:01	WI111104-1	1		.967	mg/L	96.7	90	110			
WG313384CCB4	CCB	11/10/11 23:02				U	mg/L		-0.03	0.03			

pH, Saturated Paste USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313293													
WG313293ICV	ICV	11/10/11 8:40	PCN36616	4		3.96	units	99	97	103			
L91220-01DUP	DUP	11/10/11 8:46			7.8	7.83	units				0.4	20	
WG313293CCV1	CCV	11/10/11 9:16	PCN36616	4		4.02	units	100.5	97	103			
WG313293CCV2	CCV	11/10/11 9:53	PCN36616	4		4.01	units	100.3	97	103			
WG313293CCV3	CCV	11/10/11 10:00	PCN36616	4		4.01	units	100.3	97	103			

Freeport-McMoRan - Chino Mines Company ACZ Project ID: ***L91220***
Project ID: ZN000000J8

Potassium, total (3050) M6010B ICP

WG313324

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG313324ICV	ICV	11/10/11 13:25	II111012-2	20		20.1	mg/L	100.5	90	110			
WG313324ICB	ICB	11/10/11 13:28				U	mg/L		-0.9	0.9			
WG313324PQV	PQV	11/10/11 13:31	II111024-4	1.5		1.65	mg/L	110	70	130			
WG313324ICSAB	ICSAB	11/10/11 13:35	II110922-1	25		24.22	mg/L	96.9	80	120			
WG313156PBS	PBS	11/10/11 13:41				U	mg/Kg		-90	90			
WG313156LCSS	LCSS	11/10/11 13:44	PCN38231	2960		3645	mg/Kg		2170	3760			
WG313156LCSSD	LCSSD	11/10/11 13:47	PCN38231	2960		3664	mg/Kg		2170	3760	0.5	20	
WG313324CCV1	CCV	11/10/11 14:11	II111031-1	10		9.78	mg/L	97.8	90	110			
WG313324CCB1	CCB	11/10/11 14:14				U	mg/L		-0.9	0.9			
L91220-10SDL	SDL	11/10/11 14:26			3210	3385	mg/Kg				5.5	10	
WG313324CCV2	CCV	11/10/11 14:47	II111031-1	10		9.78	mg/L	97.8	90	110			
WG313324CCB2	CCB	11/10/11 14:50				U	mg/L		-0.9	0.9			
L91220-20MS	MS	11/10/11 15:05	II111104-3	10097.13261	3260	13605	mg/Kg	102.5	75	125			
L91220-20MSD	MSD	11/10/11 15:08	II111104-3	10097.13261	3260	13849	mg/Kg	104.9	75	125	1.78	20	
WG313324CCV3	CCV	11/10/11 15:11	II111031-1	10		9.95	mg/L	99.5	90	110			
WG313324CCB3	CCB	11/10/11 15:14				.42	mg/L		-0.9	0.9			

Solids, Percent CLPSOW390, PART F, D-98

WG312735

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG312735PBS	PBS	11/01/11 17:00				U	%		99.9	100.1			
L91220-20DUP	DUP	11/01/11 17:39			95	94.9	%				0.1	20	

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-01	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-02	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-03	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-04	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-05	WG313367	Calcium, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-06	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-07	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-08	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-09	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-10	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-11	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-12	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-13	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-14	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-15	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-16	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-17	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-18	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313367	Copper, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L91220-19	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L91220-20	WG313042	Copper (1312)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG313324	Copper, total (3050)	M6010B ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG313384	Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Certification Qualifiers

Freeport-McMoRan - Chino Mines Company ACZ Project ID: ***L91220***

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
pH, Saturated Paste	USDA No. 60 (21A)
Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrate/Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction
Nitrite as N, soluble (Water)	M353.2 - Automated Cadmium Reduction

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000000J8

ACZ Project ID: L91220
Date Received: 10/12/2011 09:18
Received By: ksj
Date Printed: 10/13/2011

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
3229, 3374		11.6, 14.6	13, 15
2616		14	13
3071		13.8	14
2272		13.2	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000000J8

ACZ Project ID: L91220
Date Received: 10/12/2011 09:18
Received By: ksj
Date Printed: 10/13/2011

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L91220-01	STS-AMD-2011-W1 0-6									X		☐
L91220-02	STS-AMD-2011-W2 0-6									X		☐
L91220-03	STS-AMD-2011-W3 0-6									X		☐
L91220-04	STS-AMD-2011-W1 6-12									X		☐
L91220-05	STS-AMD-2011-W2 12-1									X		☐
L91220-06	STS-AMD-2011-W3 12-1									X		☐
L91220-07	STS-AMD-2011-N1 0-6									X		☐
L91220-08	STS-AMD-2011-N2 0-6									X		☐
L91220-09	STS-AMD-2011-N3 0-6									X		☐
L91220-10	STS-AMD-2011-N1 18-2									X		☐
L91220-11	STS-AMD-2011-N2 18-2									X		☐
L91220-12	STS-AMD-2011-N3 18-2									X		☐
L91220-13	STS-AMD-2011-NE1 0-6									X		☐
L91220-14	STS-AMD-2011-NE2 0-6									X		☐
L91220-15	STS-AMD-2011-NE3 0-6									X		☐
L91220-16	STS-AMD-2011-NE1 18-									X		☐
L91220-17	STS-AMD-2011-NE2 18-									X		☐
L91220-18	STS-AMD-2011-NE3 18-									X		☐
L91220-19	STS-AMD-2011-E1 0-6									X		☐
L91220-20	STS-AMD-2011-E2 0-6									X		☐

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc. L91220

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐

If yes, please include state forms. Results will be reported to PQL. NO ☒

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Carolyn Meyer
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2011-W1 0-6	10.4.11 : 08:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W2 0-6	10.4.11 : 09:23'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W3 0-6	10.4.11 : 09:05'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W1 6-12	10.4.11 : 08:30'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W2 12-18	10.4.11 : 09:41'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W3 12-18	10.4.11 : 09:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N1 0-6	10.5.11 : 08:45'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N2 0-6	10.5.11 : 08:50'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N3 0-6	10.5.11 : 08:50'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N1 18-24	10.5.11 : 09:10'	SO	1	x	x	x	x	x	x	x	

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY	DATE:TIME
Pam Pinson	10-10-11 - 3:00pm		[illegible]-11 9:15

①

L91220 Chain of Custody

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L91220
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Copy of Report to

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Invoice to

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

PROJECT INFORMATION

ANALYSES REQUESTED [illegible]

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Carolyn Meyer
Are any samples NRC licensable material? Yes No

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2011-N2 18-24	10.5.11 : 09:40'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N3 18-24	10.5.11 : 10:07'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NE1 0-6	10.7.11 : 08:40'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NE2 0-6	10.7.11 : 08:35'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NE3 0-6	10.7.11 : 08:56'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NE1 18-24	10.7.11 : 08:55'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NE2 18-24	10.7.11 : 09:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-NE3 18-24	10.7.11 : 09:00'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-E1 0-6	10.6.11 : 09:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-E2 0-6	10.6.11 : 09:15'	SO	1	x	x	x	x	x	x	x	

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
Pam Pinson	10-10-11 3:00pm		
			10-12-11 9:45

②

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 09, 2012

Report to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
PO Box 10
Bayard, NM 88023

Bill to:
Pam Pinson
Freeport-McMoRan - Chino Mines Company
P.O. Box 13308
Phoenix, AZ 85002-3308

cc: Matthew Barkley, Sheri Fling

Project ID: ZN000000J8
ACZ Project ID: L92223

Pam Pinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 07, 2011. This project has been assigned to ACZ's project number, L92223. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L92223. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 09, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L92223-01***
Project ID:	ZN000000J8	Date Sampled:	*10/04/11 08:20*
Sample ID:	STS-AMD-2011-W1 0-6	Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 9:41	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 16:52	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	5.6		*	mg/Kg	0.5	3	01/05/12 21:39	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-02***
Sample ID:	STS-AMD-2011-W2 0-6	Date Sampled:	*10/04/11 09:23*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 10:02	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 16:53	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	5.5		*	mg/Kg	0.5	3	01/05/12 21:40	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-W3 0-6

ACZ Sample ID: ***L92223-03***
Date Sampled: *10/04/11 09:05*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 10:23	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 16:54	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	6.1		*	mg/Kg	0.5	3	01/05/12 21:42	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-04***
Sample ID:	STS-AMD-2011-W1 6-12	Date Sampled:	*10/04/11 08:30*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 10:44	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 16:55	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	9.4		*	mg/Kg	0.5	3	01/05/12 21:43	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-05***
Sample ID:	STS-AMD-2011-W2 12-1	Date Sampled:	*10/04/11 09:41*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 11:05	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 16:56	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	6.7		*	mg/Kg	0.5	3	01/05/12 21:44	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-W3 12-1

ACZ Sample ID: ***L92223-06***
Date Sampled: *10/04/11 09:20*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 11:26	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 16:57	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	8.0		*	mg/Kg	0.5	3	01/05/12 21:45	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-07***
Sample ID:	STS-AMD-2011-N1 0-6	Date Sampled:	*10/05/11 08:45*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 11:46	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.6	B	*	mg/Kg	0.5	3	01/05/12 16:58	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	18.2		*	mg/Kg	0.5	3	01/05/12 21:46	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-N2 0-6

ACZ Sample ID: ***L92223-08***
Date Sampled: *10/05/11 08:50*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 12:28	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.8	B	*	mg/Kg	0.5	3	01/05/12 16:59	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	12.8		*	mg/Kg	0.5	3	01/05/12 21:51	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-N3 0-6

ACZ Sample ID: ***L92223-09***
Date Sampled: *10/05/11 08:50*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 13:10	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.9	B	*	mg/Kg	0.5	3	01/05/12 17:05	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	11.6		*	mg/Kg	0.5	3	01/05/12 21:53	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-10***
Sample ID:	STS-AMD-2011-N1 18-2	Date Sampled:	*10/05/11 09:10*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 13:31	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 17:06	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	5.3		*	mg/Kg	0.5	3	01/05/12 21:54	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-11***
Sample ID:	STS-AMD-2011-N2 18-2	Date Sampled:	*10/05/11 09:40*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 13:52	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 17:07	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	5.5		*	mg/Kg	0.5	3	01/05/12 21:55	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L92223-12***
Project ID:	ZN000000J8	Date Sampled:	*10/05/11 10:07*
Sample ID:	STS-AMD-2011-N3 18-2	Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 14:13	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.6	B	*	mg/Kg	0.5	3	01/05/12 17:08	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	5.5		*	mg/Kg	0.5	3	01/05/12 21:56	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8
Sample ID:	STS-AMD-2011-NE1 0-6
ACZ Sample ID:	***L92223-13***
Date Sampled:	*10/07/11 08:40*
Date Received:	*12/07/11*
Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 14:33	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.1	B	*	mg/Kg	0.5	3	01/05/12 17:09	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	16.2		*	mg/Kg	0.5	3	01/05/12 21:57	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8

Sample ID: STS-AMD-2011-NE2 0-6

ACZ Sample ID: ***L92223-14***

Date Sampled: *10/07/11 08:35*

Date Received: *12/07/11*

Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 14:54	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.7	B	*	mg/Kg	0.5	3	01/05/12 17:10	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	9.0		*	mg/Kg	0.5	3	01/05/12 21:58	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company		ACZ Sample ID:	***L92223-15***
Project ID:	ZN000000J8	Date Sampled:	*10/07/11 08:56*
Sample ID:	STS-AMD-2011-NE3 0-6	Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 15:15	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	2.4	B	*	mg/Kg	0.5	3	01/05/12 17:11	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	17.6		*	mg/Kg	0.5	3	01/05/12 22:00	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-16***
Sample ID:	STS-AMD-2011-NE1 18-	Date Sampled:	*10/07/11 08:55*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 15:36	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 17:12	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	4.9		*	mg/Kg	0.5	3	01/05/12 22:01	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company

Project ID:	ZN000000J8	ACZ Sample ID:	***L92223-17***
Sample ID:	STS-AMD-2011-NE2 18-	Date Sampled:	*10/07/11 09:20*
		Date Received:	*12/07/11*
		Sample Matrix:	*Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 15:57	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 17:16	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	7.4		*	mg/Kg	0.5	3	01/05/12 22:04	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-NE3 18-

ACZ Sample ID: ***L92223-18***
Date Sampled: *10/07/11 09:00*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 16:18	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	0.6	B	*	mg/Kg	0.5	3	01/05/12 17:17	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	7.0		*	mg/Kg	0.5	3	01/05/12 22:05	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company

Project ID: ZN000000J8
Sample ID: STS-AMD-2011-E1 0-6

ACZ Sample ID: ***L92223-19***
Date Sampled: *10/06/11 09:20*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 16:39	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate		U	*	mg/Kg	0.5	3	01/05/12 17:18	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	8.1		*	mg/Kg	0.5	3	01/05/12 22:06	pjb

** Please refer to Qualifier Reports for details.*

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8
Sample ID: STS-AMD-2011-E2 0-6

ACZ Sample ID: ***L92223-20***
Date Sampled: *10/06/11 09:15*
Date Received: *12/07/11*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor							01/05/12 16:59	mpb

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Water Extraction	ASA No. 9 10-2.3.2							01/03/12 9:00	ndj

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	5.1		*	mg/Kg	0.5	3	01/05/12 17:19	tcd
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor	22.4		*	mg/Kg	0.5	3	01/05/12 22:08	pjb

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)
ASD	Analytical Spike (Post Digestion) Duplicate
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification standard
DUP	Sample Duplicate
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification standard
ICSAB	Inter-element Correction Standard - A plus B solutions
LCSS	Laboratory Control Sample - Soil
LCSSD	Laboratory Control Sample - Soil Duplicate
LCSW	Laboratory Control Sample - Water
LCSWD	Laboratory Control Sample - Water Duplicate
LFB	Laboratory Fortified Blank
LFM	Laboratory Fortified Matrix
LFMD	Laboratory Fortified Matrix Duplicate
LRB	Laboratory Reagent Blank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PBS	Prep Blank - Soil
PBW	Prep Blank - Water
PQV	Practical Quantitation Verification standard
SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.

(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.

(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.

(4) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.

(5) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.

(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Freeport-McMoRan - Chino Mines Company
Project ID: ZN000000J8

ACZ Project ID: ***L92223***

Nitrogen, ammonia (Water) M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG316253													
WG316253ICV	ICV	01/05/12 11:19	WI111117-1	1.002		1.011	mg/L	100.9	90	110			
WG316253ICB	ICB	01/05/12 11:22				U	mg/L		-0.15	0.15			
WG316288													
WG316288CCV1	CCV	01/05/12 16:47	WI111101-1	2		2.032	mg/L	101.6	90	110			
WG316288CCB1	CCB	01/05/12 16:48				U	mg/L		-0.15	0.15			
WG316288LFB	LFB	01/05/12 16:49	WI111101-3	1		.97	mg/Kg	97	85	115			
WG316056PBS	PBS	01/05/12 16:51				U	mg/Kg		-1.5	1.5			
WG316288CCV2	CCV	01/05/12 17:00	WI111101-1	2		2.033	mg/L	101.7	90	110			
WG316288CCB2	CCB	01/05/12 17:01				U	mg/L		-0.15	0.15			
L92223-08AS	AS	01/05/12 17:03	WI111101-3	5	.8	5.85	mg/Kg	101	75	125			
L92223-08DUP	DUP	01/05/12 17:04			.8	.95	mg/Kg				17.1	20	RA
WG316288CCV3	CCV	01/05/12 17:14	WI111101-1	2		2.022	mg/L	101.1	90	110			
WG316288CCB3	CCB	01/05/12 17:15				U	mg/L		-0.15	0.15			
WG316288CCV4	CCV	01/05/12 17:22	WI111101-1	2		2.043	mg/L	102.2	90	110			
WG316288CCB4	CCB	01/05/12 17:23				U	mg/L		-0.15	0.15			

Nitrogen, total Kjeldahl, water extract M351.2 - Block Digestor

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG316299													
WG316299ICV	ICV	01/05/12 21:35	WI111215-6	4		4	mg/L	100	90	110			
WG316299ICB	ICB	01/05/12 21:36				U	mg/L		-0.3	0.3			
WG316168PBS	PBS	01/05/12 21:37				U	%		-1.5	1.5			
WG316168LFB	LFB	01/05/12 21:38	WI111115-3	2.5		2.42	%	96.8	85	115			
L92223-07MS	MS	01/05/12 21:47	WI111115-3	12.5	18.2	28.16	%	79.7	75	125			
WG316299CCV1	CCV	01/05/12 21:48	WI111115-2	5		4.79	mg/L	95.8	90	110			
WG316299CCB1	CCB	01/05/12 21:49				U	mg/Kg		-0.3	0.3			
L92223-08DUP	DUP	01/05/12 21:52			12.8	12.38	%				3.3	20	
WG316299CCV2	CCV	01/05/12 22:02	WI111115-2	5		4.83	mg/L	96.6	90	110			
WG316299CCB2	CCB	01/05/12 22:03				U	mg/Kg		-0.3	0.3			
WG316299CCV3	CCV	01/05/12 22:11	WI111115-2	5		4.93	mg/L	98.6	90	110			
WG316299CCB3	CCB	01/05/12 22:12				U	mg/Kg		-0.3	0.3			

Freeport-McMoRan - Chino Mines Company

ACZ Project ID: ***L92223***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L92223-01	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-02	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-03	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-04	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-05	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-06	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-07	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L92223-08	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-09	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-10	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-11	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-12	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-13	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-14	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L92223-15	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-16	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-17	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-18	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-19	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L92223-20	WG316288	Nitrogen, ammonia (Water)	M350.1 - Automated Phenate	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Nitrogen, ammonia (Water)	M350.1 - Automated Phenate
Nitrogen, total Kjeldahl, water extract	M351.2 - Block Digestor

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000000J8

ACZ Project ID:	L91220
Date Received:	10/12/2011 09:18
Received By:	ksj
Date Printed:	10/13/2011

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
3229, 3374		11.6, 14.6	13, 15
2616		14	13
3071		13.8	14
2272		13.2	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Sample Receipt

Freeport-McMoRan - Chino Mines Company
ZN000000J8

ACZ Project ID: L91220
Date Received: 10/12/2011 09:18
Received By: ksj
Date Printed: 10/13/2011

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L91220-01	STS-AMD-2011-W1 0-6									X		☐
L91220-02	STS-AMD-2011-W2 0-6									X		☐
L91220-03	STS-AMD-2011-W3 0-6									X		☐
L91220-04	STS-AMD-2011-W1 6-12									X		☐
L91220-05	STS-AMD-2011-W2 12-1									X		☐
L91220-06	STS-AMD-2011-W3 12-1									X		☐
L91220-07	STS-AMD-2011-N1 0-6									X		☐
L91220-08	STS-AMD-2011-N2 0-6									X		☐
L91220-09	STS-AMD-2011-N3 0-6									X		☐
L91220-10	STS-AMD-2011-N1 18-2									X		☐
L91220-11	STS-AMD-2011-N2 18-2									X		☐
L91220-12	STS-AMD-2011-N3 18-2									X		☐
L91220-13	STS-AMD-2011-NE1 0-6									X		☐
L91220-14	STS-AMD-2011-NE2 0-6									X		☐
L91220-15	STS-AMD-2011-NE3 0-6									X		☐
L91220-16	STS-AMD-2011-NE1 18-									X		☐
L91220-17	STS-AMD-2011-NE2 18-									X		☐
L91220-18	STS-AMD-2011-NE3 18-									X		☐
L91220-19	STS-AMD-2011-E1 0-6									X		☐
L91220-20	STS-AMD-2011-E2 0-6									X		☐

Sample Container Preservation Legend

Abbreviation	**Description**	**Container Type**	**Preservative/Limits**
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

L92223-Relog

ACZ Laboratories, Inc. ~~L91220~~
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒
If yes, please include state forms. Results will be reported to PQL.

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Carolyn Meyer
Are any samples NRC licensable material? Yes No

			# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon	
STS-AMD-2011-W1 0-6	10.4.11 : 08:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W2 0-6	10.4.11 : 09:23'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W3 0-6	10.4.11 : 09:05'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W1 6-12	10.4.11 : 08:30'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W2 12-18	10.4.11 : 09:41'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-W3 12-18	10.4.11 : 09:20'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N1 0-6	10.5.11 : 08:45'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N2 0-6	10.5.11 : 08:50'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N3 0-6	10.5.11 : 08:50'	SO	1	x	x	x	x	x	x	x	
STS-AMD-2011-N1 18-24	10.5.11 : 09:10'	SO	1	x	x	x	x	x	x	x	

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.
Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Pam Pinson	10-10-11 - 7:00pm		
			11 9:15

①

L92223 Chain of Custody

~~L91220 Chain of Custody~~

10-7-11

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L91220

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

Name: Matthew Barkley
Company: ARCADIS

E-mail: Matthew.Barkley@arcadis-us.com
Telephone: 303-231-9115 ext 157

Name: Pam Pinson
Company: Chino Mines Company
E-mail: Pamela_Pinson@FMI.com

Address: P.O. Box 10
Bayard, NM 88023
Telephone: 575-912-5213

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for CO DW Compliance Monitoring? YES ☐ NO ☒

If yes, please include state forms. Results will be reported to PQL.

Quote #:
Project/PO #:
Reporting state for compliance testing:
Sampler's Name: Carolyn Meyer
Are any samples NRC licensable material? Yes No

			# of Containers	soil sieved to < 2mm	Copper (Total and SPLP)	pH	Calcium	Nitrogen (TKN, nitrate/nitrite, ammonia)	Potassium	Total Organic Carbon
STS-AMD-2011-N2 18-24	10.5.11 : 09:40'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-N3 18-24	10.5.11 : 10:07'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-NE1 0-6	10.7.11 : 08:40'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-NE2 0-6	10.7.11 : 08:35'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-NE3 0-6	10.7.11 : 08:56'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-NE1 18-24	10.7.11 : 08:55'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-NE2 18-24	10.7.11 : 09:20'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-NE3 18-24	10.7.11 : 09:00'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-E1 0-6	10.6.11 : 09:20'	SO	1	x	x	x	x	x	x	x
STS-AMD-2011-E2 0-6	10.6.11 : 09:15'	SO	1	x	x	x	x	x	x	x

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please send to Sheri Fling at URS for validation. Sieve all soil samples to <2 mm prior to analysis. Soil should be reported on a dry weight basis.

Methods:
pH - 9045C, Calcium - 6010B, Potassium - 6010B, Nitrogen - 350.1/353.2/351.4, Total Organic Carbon - 9060, Copper - Modified 1312 extraction, 3010A digestion, 6010B analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Pam Pinson	10-10-11 3:00pm		10-12-11 9:45

②

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTHEAST2(0-0.5)	W1E0197-01	Soil	03-May-11 11:30	10-May-2011
NORTHEAST2(1.5-2)	W1E0197-02	Soil	03-May-11 11:55	10-May-2011
NORTHEAST3(0-0.5)	W1E0197-03	Soil	03-May-11 12:20	10-May-2011
NORTHEAST3(1.5-2)	W1E0197-04	Soil	03-May-11 12:40	10-May-2011
NORTHEAST REF1(0-.5)	W1E0197-05	Soil	03-May-11 13:10	10-May-2011
NORTHEAST REF1(1-1.5)	W1E0197-06	Soil	03-May-11 13:25	10-May-2011
NORTHEAST REF2(0-0.5)	W1E0197-07	Soil	03-May-11 13:55	10-May-2011
NORTHEAST REF2(1-1.5)	W1E0197-08	Soil	03-May-11 14:15	10-May-2011
DUP4(050311)	W1E0197-09	Soil	03-May-11 00:00	10-May-2011
EAST#1(0-0.5)	W1E0197-10	Soil	03-May-11 15:10	10-May-2011
EAST#1(1-1.5)	W1E0197-11	Soil	03-May-11 15:30	10-May-2011
EAST#2(0-0.5)	W1E0197-12	Soil	03-May-11 15:15	10-May-2011
EAST#2(0.5-1.0)	W1E0197-13	Soil	03-May-11 15:55	10-May-2011
EAST#3(0-0.5)	W1E0197-14	Soil	03-May-11 16:10	10-May-2011
EAST#3(1.5-2)	W1E0197-15	Soil	03-May-11 16:25	10-May-2011
EAST REF1(0-0.5)	W1E0197-16	Soil	03-May-11 16:40	10-May-2011
EAST REF1(0.5-1.0)	W1E0197-17	Soil	03-May-11 16:50	10-May-2011
EAST REF2(0-0.5)	W1E0197-18	Soil	03-May-11 16:55	10-May-2011
EAST REF2(0.5-1.0)	W1E0197-19	Soil	03-May-11 17:05	10-May-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

06/23/11mab: Report reissued; revised narrative.

05/26/11 (jk) - Modified SPLP extraction was used as per client instruction.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST2(0-0.5)**
SVL Sample ID: **W1E0197-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 11:30
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5270	mg/kg	4.0	0.5		W120270	DT	05/20/11 10:08	
EPA 6010B	**Copper**	2170	mg/kg	1.00	0.16		W120270	DT	05/20/11 10:09	
EPA 6010B	**Potassium**	4710	mg/kg	50.0	8.70		W120270	DT	05/20/11 10:08	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.47	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:14	
EPA 353.2	**Nitrate/Nitrite as N**	10.3	mg/kg	0.50	0.15		W122052	TJK	05/25/11 14:59	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.58	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.266	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 11:26	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST2(1.5-2)**
SVL Sample ID: **W1E0197-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 11:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6830	mg/kg	4.0	0.5		W120270	DT	05/20/11 10:14	
EPA 6010B	**Copper**	196	mg/kg	1.00	0.16		W120270	DT	05/20/11 10:16	
EPA 6010B	**Potassium**	4970	mg/kg	50.0	8.70		W120270	DT	05/20/11 10:14	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:15	
EPA 353.2	**Nitrate/Nitrite as N**	3.85	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:00	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.18	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 11:42	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0197**
Bayard, NM 88023	Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST3(0-0.5)**
SVL Sample ID: **W1E0197-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 12:20
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8390	mg/kg	4.0	0.5		W120270	DT	05/20/11 10:20	
EPA 6010B	**Copper**	2330	mg/kg	1.00	0.16		W120270	DT	05/20/11 10:21	
EPA 6010B	**Potassium**	4520	mg/kg	50.0	8.70		W120270	DT	05/20/11 10:20	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	7.64	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:16	
EPA 353.2	**Nitrate/Nitrite as N**	14.3	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:01	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.06	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	1.28	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 11:48	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST3(1.5-2)**
SVL Sample ID: **W1E0197-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 12:40
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4570	mg/kg	4.0	0.5		W120270	DT	05/20/11 10:26	
EPA 6010B	**Copper**	39.0	mg/kg	1.00	0.16		W120270	DT	05/20/11 10:27	
EPA 6010B	**Potassium**	4890	mg/kg	50.0	8.70		W120270	DT	05/20/11 10:26	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:18	
EPA 353.2	**Nitrate/Nitrite as N**	2.39	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:06	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.43	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.014	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 11:54	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST REF1(0-.5)**
SVL Sample ID: **W1E0197-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 13:10
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	3690	mg/kg	4.0	0.5		W120270	DT	05/20/11 10:31	
EPA 6010B	**Copper**	2560	mg/kg	1.00	0.16		W120270	DT	05/20/11 10:33	
EPA 6010B	**Potassium**	3170	mg/kg	50.0	8.70		W120270	DT	05/20/11 10:31	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	10.8	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:24	
EPA 353.2	**Nitrate/Nitrite as N**	11.4	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:07	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SW-846 1312	**Final Fluid pH**	4.87	pH Units				W120260	ESB	05/17/11 08:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	15.6	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 12:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST REF1(1-1.5)**
SVL Sample ID: **W1E0197-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 13:25
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5030	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:04	
EPA 6010B	**Copper**	480	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:06	
EPA 6010B	**Potassium**	4060	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:04	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.64	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:26	
EPA 353.2	**Nitrate/Nitrite as N**	5.46	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:08	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	5.95	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.011	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 12:07	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST REF2(0-0.5)**
SVL Sample ID: **W1E0197-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 13:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4960	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:16	
EPA 6010B	**Copper**	2890	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:17	
EPA 6010B	**Potassium**	3810	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:16	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	5.66	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:27	
EPA 353.2	**Nitrate/Nitrite as N**	10.1	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:09	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	5.09	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	10.8	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 13:43	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **NORTHEAST REF2(1-1.5)**
SVL Sample ID: **W1E0197-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 14:15
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	3690	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:22	
EPA 6010B	**Copper**	110	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:23	
EPA 6010B	**Potassium**	2370	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:22	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:28	
EPA 353.2	**Nitrate/Nitrite as N**	1.36	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:10	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.60	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.018	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 13:49	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **DUP4(050311)**
SVL Sample ID: **W1E0197-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6160	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:28	
EPA 6010B	**Copper**	1280	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:29	
EPA 6010B	**Potassium**	4680	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:28	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	4.01	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:30	
EPA 353.2	**Nitrate/Nitrite as N**	25.8	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:11	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.99	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.518	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 13:55	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST#1(0-0.5)**
SVL Sample ID: **W1E0197-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5730	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:33	
EPA 6010B	**Copper**	1300	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:35	
EPA 6010B	**Potassium**	4660	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:33	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	5.28	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:31	
EPA 353.2	**Nitrate/Nitrite as N**	28.0	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:12	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.15	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.524	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:01	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST#1(1-1.5)**
SVL Sample ID: **W1E0197-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:30
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5150	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:39	
EPA 6010B	**Copper**	566	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:40	
EPA 6010B	**Potassium**	5040	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:39	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:32	
EPA 353.2	**Nitrate/Nitrite as N**	2.94	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:13	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.18	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.026	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:07	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST#2(0-0.5)**
SVL Sample ID: **W1E0197-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:15
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	10600	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:44	
EPA 6010B	**Copper**	836	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:45	
EPA 6010B	**Potassium**	6030	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:44	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	5.09	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:34	
EPA 353.2	**Nitrate/Nitrite as N**	43.7	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:15	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.16	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.224	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST#2(0.5-1.0)**
SVL Sample ID: **W1E0197-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7450	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:50	
EPA 6010B	**Copper**	494	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:51	
EPA 6010B	**Potassium**	5070	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:50	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.59	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:35	
EPA 353.2	**Nitrate/Nitrite as N**	7.31	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:20	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.34	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.032	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:19	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0197**
Bayard, NM 88023	Reported: 23-Jun-11 13:22

Client Sample ID: **EAST#3(0-0.5)**
SVL Sample ID: **W1E0197-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5430	mg/kg	4.0	0.5		W120270	DT	05/20/11 11:55	
EPA 6010B	**Copper**	349	mg/kg	1.00	0.16		W120270	DT	05/20/11 11:56	
EPA 6010B	**Potassium**	6930	mg/kg	50.0	8.70		W120270	DT	05/20/11 11:55	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	3.16	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:36	
EPA 353.2	**Nitrate/Nitrite as N**	28.0	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:21	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.38	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.225	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:24	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST#3(1.5-2)**
SVL Sample ID: **W1E0197-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:25
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	23200	mg/kg	4.0	0.5		W120270	DT	05/20/11 12:45	
EPA 6010B	**Copper**	53.6	mg/kg	1.00	0.16		W120270	DT	05/20/11 12:47	
EPA 6010B	**Potassium**	4680	mg/kg	50.0	8.70		W120270	DT	05/20/11 12:45	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.70	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:43	
EPA 353.2	**Nitrate/Nitrite as N**	9.27	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:22	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.56	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.018	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:30	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST REF1(0-0.5)**
SVL Sample ID: **W1E0197-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:40
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	2680	mg/kg	4.0	0.5		W120270	DT	05/20/11 12:51	
EPA 6010B	**Copper**	1280	mg/kg	1.00	0.16		W120270	DT	05/20/11 12:52	
EPA 6010B	**Potassium**	3700	mg/kg	50.0	8.70		W120270	DT	05/20/11 12:51	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.51	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:44	
EPA 353.2	**Nitrate/Nitrite as N**	3.37	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:23	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	5.67	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	3.86	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:36	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST REF1(0.5-1.0)**
SVL Sample ID: **W1E0197-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:50
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5380	mg/kg	4.0	0.5		W120270	DT	05/20/11 12:56	
EPA 6010B	**Copper**	800	mg/kg	1.00	0.16		W120270	DT	05/20/11 12:58	
EPA 6010B	**Potassium**	4570	mg/kg	50.0	8.70		W120270	DT	05/20/11 12:56	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:46	
EPA 353.2	**Nitrate/Nitrite as N**	5.83	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:24	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.94	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.036	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:54	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST REF2(0-0.5)**
SVL Sample ID: **W1E0197-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	2150	mg/kg	4.0	0.5		W120270	DT	05/20/11 13:02	
EPA 6010B	**Copper**	890	mg/kg	1.00	0.16		W120270	DT	05/20/11 13:03	
EPA 6010B	**Potassium**	2780	mg/kg	50.0	8.70		W120270	DT	05/20/11 13:02	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.76	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:47	
EPA 353.2	**Nitrate/Nitrite as N**	3.20	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:25	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.04	pH Units				W120260	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.685	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 14:59	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Client Sample ID: **EAST REF2(0.5-1.0)**
SVL Sample ID: **W1E0197-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 17:05
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	3010	mg/kg	4.0	0.5		W120270	DT	05/20/11 13:07	
EPA 6010B	**Copper**	1010	mg/kg	1.00	0.16		W120270	DT	05/20/11 13:09	
EPA 6010B	**Potassium**	3820	mg/kg	50.0	8.70		W120270	DT	05/20/11 13:07	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:48	
EPA 353.2	**Nitrate/Nitrite as N**	6.67	mg/kg	0.50	0.15		W122052	TJK	05/25/11 15:26	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SW-846 1312	**Final Fluid pH**	5.68	pH Units				W120260	ESB	05/17/11 08:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	1.33	mg/L Extract	0.010	0.005		W122069	DT	05/24/11 15:05	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0197**
Reported: 23-Jun-11 13:22

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010B	Calcium	mg/kg	<4.0	0.5	4.0	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	<1.00	0.16	1.00	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W120270	20-May-11	
Classical Chemistry Parameters								
EPA 350.1	Ammonia as N	mg/kg	<0.30	0.13	0.30	W122054	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.50	0.15	0.50	W122052	25-May-11	
SPLP Extraction Parameters								
SW-846 1312	Final Fluid pH	pH Units	5.53			W120260	17-May-11	
SPLP Leachates (Metals)								
EPA 6010B	Copper	mg/L Extract	<0.010	0.005	0.010	W122069	24-May-11	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010B	Calcium	mg/kg	1970	2000	98.5	80 - 120	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	95.4	100	95.4	80 - 120	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	1900	2000	95.0	80 - 120	W120270	20-May-11	
Classical Chemistry Parameters									
EPA 350.1	Ammonia as N	mg/L	1.58	1.65	95.5	80 - 120	W122054	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/L	2.11	2.34	90.1	80 - 120	W122052	25-May-11	
SPLP Leachates (Metals)									
EPA 6010B	Copper	mg/L Extract	0.914	1.00	91.4	80 - 120	W122069	24-May-11	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
EPA 350.1	Ammonia as N	mg/kg	<0.30	<0.30	UDL	20	W122054	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	2.89	2.92	0.9	20	W122052	25-May-11	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	7890	6940	2000	47.9	75 - 125	W120270	20-May-11	M2
EPA 6010B	Copper	mg/kg	151	43.7	100	108	75 - 125	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	7180	4840	2000	117	75 - 125	W120270	20-May-11	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	mg/kg	0.90	<0.30	5.00	18.0	90 - 110	W122054	25-May-11	M2
EPA 350.1	Ammonia as N	mg/kg	0.64	<0.30	5.00	7.99	90 - 110	W122054	25-May-11	M2
EPA 353.2	Nitrate/Nitrite as N	mg/kg	11.8	2.92	10.0	88.7	75 - 125	W122052	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	11.6	2.94	10.0	86.1	75 - 125	W122052	25-May-11	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	1.19	0.266	1.00	92.3	75 - 125	W122069	24-May-11	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	8000	7890	2000	1.3	20	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	129	151	100	16.2	20	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	7060	7180	2000	1.7	20	W120270	20-May-11	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	1.17	1.19	1.00	1.8	20	W122069	24-May-11	

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	8430	6940	2000	74.8	75 - 125	W120270	20-May-11	M2

Notes and Definitions

M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Anatek Labs, Inc.

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Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0196
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513028-001	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTH#1(0-0.5)	**Sampling Time**	12:10 PM		
Matrix	Soil	**Sample Location**	W1E0196-01		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1750	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	1.5	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-002	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTH#1(1.5-2)	**Sampling Time**	1:00 PM		
Matrix	Soil	**Sample Location**	W1E0196-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	436	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	11.7	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-003	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTH#2(0-.5)	**Sampling Time**	1:25 PM		
Matrix	Soil	**Sample Location**	W1E0196-03		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	983	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	3.1	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-004	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTH#2(1-1.5)	**Sampling Time**	2:00 PM		
Matrix	Soil	**Sample Location**	W1E0196-04		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	632	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	7.9	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10	**Project Name:**	SVL #W1E0196
	BAYARD, NM 88023		
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513028-005	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011	11:40 AM
Client Sample ID	NORTH#3(0-0.5)	**Sampling Time**	2:20 PM			
Matrix	Soil	**Sample Location**	W1E0196-05			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	747	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	2.9	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-006	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011	11:40 AM
Client Sample ID	NORTH#31(1.5-2)	**Sampling Time**	2:50 PM			
Matrix	Soil	**Sample Location**	W1E0196-06			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	429	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	8.2	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-007	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011	11:40 AM
Client Sample ID	NORTH REF1(0-0.5)	**Sampling Time**	3:20 PM			
Matrix	Soil	**Sample Location**	W1E0196-07			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	860	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	8.9	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-008	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011	11:40 AM
Client Sample ID	NORTH REF1(1.5-2)	**Sampling Time**	4:10 PM			
Matrix	Soil	**Sample Location**	W1E0196-08			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	383	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	11.6	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0196
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513028-009	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTH REF2(0-0.5)	**Sampling Time**	4:35 PM		
Matrix	Soil	**Sample Location**	W1E0196-09		
Comments					

Parameter	**Result**	**Units**	**PQL**	**Analysis Date**	**Analyst**	**Method**	**Qualifier**
TKN	647	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	0.6	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-010	**Sampling Date**	5/2/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTH REF2(1.5-2)	**Sampling Time**	5:10 PM		
Matrix	Soil	**Sample Location**	W1E0196-10		
Comments					

Parameter	**Result**	**Units**	**PQL**	**Analysis Date**	**Analyst**	**Method**	**Qualifier**
TKN	531	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	16.5	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-011	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	WEST#1(0-0.5)	**Sampling Time**	6:30 PM		
Matrix	Soil	**Sample Location**	W1E0196-11		
Comments					

Parameter	**Result**	**Units**	**PQL**	**Analysis Date**	**Analyst**	**Method**	**Qualifier**
TKN	723	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	0.6	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-012	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	WEST#1(1.5-2)	**Sampling Time**	8:20 AM		
Matrix	Soil	**Sample Location**	W1E0196-12		
Comments					

Parameter	**Result**	**Units**	**PQL**	**Analysis Date**	**Analyst**	**Method**	**Qualifier**
TKN	559	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	6.2	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0196
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513028-013	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	WEST#2(0-0.5)	**Sampling Time**	8:35 AM		
Matrix	Soil	**Sample Location**	W1E0196-13		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	919	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	1.8	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-014	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	WEST#2(1-1.5)	**Sampling Time**	9:00 AM		
Matrix	Soil	**Sample Location**	W1E0196-14		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1320	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	9.4	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-015	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	WEST#3(0-0.5)	**Sampling Time**	8:15 AM		
Matrix	Soil	**Sample Location**	W1E0196-15		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	798	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	0.8	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-016	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	WEST#3(1.5-2)	**Sampling Time**	9:45 AM		
Matrix	Soil	**Sample Location**	W1E0196-16		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	915	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	10.4	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0196
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513028-017	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	DUP1(050311)	**Sampling Time**			
Matrix	Soil	**Sample Location**	W1E0196-17		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1340	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	1.5	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-018	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	DUP2(050311)	**Sampling Time**			
Matrix	Soil	**Sample Location**	W1E0196-18		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	767	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	0.6	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-019	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	DUP3(050311)	**Sampling Time**			
Matrix	Soil	**Sample Location**	W1E0196-19		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1230	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	2.9	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513028-020	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST1(0-0.5)	**Sampling Time**	10:45 AM		
Matrix	Soil	**Sample Location**	W1E0196-20		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1200	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	2.7	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0196
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513028-021	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST1(1-1.5)	**Sampling Time**	11:10 AM		
Matrix	Soil	**Sample Location**	W1E0196-21		
Comments					

Parameter	**Result**	**Units**	**PQL**	**Analysis Date**	**Analyst**	**Method**	**Qualifier**
TKN	668	mg/Kg	75	5/25/2011	CRW	SM4500NORGC	
%moisture	13.4	Percent		5/17/2011	CAA	%moisture	

Authorized Signature John W. Codd

John Coddington, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Anatek Labs, Inc.

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Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513028
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0196
Attn:	PAM PINSON		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TKN	4.96	mg/kg	5	99.2	80-120	5/25/2011	5/25/2011
TKN	4.80	mg/kg	5	96.0	80-120	5/25/2011	5/25/2011

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
110513029-001	TKN	1220	2300	mg/Kg	994	108.7	70-130	5/25/2011	5/25/2011
110513028-002	TKN	436	1370	mg/Kg	1071	87.2	70-130	5/25/2011	5/25/2011

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TKN	2360	mg/Kg	1026	111.1	2.6	0-20	5/25/2011	5/25/2011
TKN	1420	mg/Kg	1073	91.7	3.6	0-20	5/25/2011	5/25/2011

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
TKN	ND	mg/Kg	25	5/25/2011	5/25/2011
TKN	ND	mg/Kg	25	5/25/2011	5/25/2011

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Login Report

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513028
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0196

Comment:

Sample #: 110513028-001 **Customer Sample #:** NORTH#1(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/2/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-002 **Customer Sample #:** NORTH#1(1.5-2)

Recv'd: ☑ **Collector:** **Date Collected:** 5/2/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-003 **Customer Sample #:** NORTH#2(0-.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/2/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513028
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0196

Comment:

Sample #: 110513028-004 **Customer Sample #:** NORTH#2(1-1.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/2/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-005 **Customer Sample #:** NORTH#3(0-0.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/2/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-006 **Customer Sample #:** NORTH#31(1.5-2)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/2/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-007 **Customer Sample #:** NORTH REF1(0-0.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/2/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513028
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0196

Comment:

Sample #: 110513028-008 **Customer Sample #:** NORTH REF1(1.5-2)

Recv'd: ☑ **Collector:** **Date Collected:** 5/2/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-009 **Customer Sample #:** NORTH REF2(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/2/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-010 **Customer Sample #:** NORTH REF2(1.5-2)

Recv'd: ☑ **Collector:** **Date Collected:** 5/2/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-011 **Customer Sample #:** WEST#1(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES **Order ID:** 110513028

PO BOX 10 **Order Date:** 5/13/2011

BAYARD NM 88023

Contact Name: PAM PINSON **Project Name:** SVL #W1E0196

Comment:

Sample #: 110513028-012 **Customer Sample #:** WEST#1(1.5-2)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011

Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-013 **Customer Sample #:** WEST#2(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011

Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-014 **Customer Sample #:** WEST#2(1-1.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011

Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-015 **Customer Sample #:** WEST#3(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011

Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513028
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0196

Comment:

Sample #: 110513028-016 **Customer Sample #:** WEST#3(1.5-2)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-017 **Customer Sample #:** DUP1(050311)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-018 **Customer Sample #:** DUP2(050311)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-019 **Customer Sample #:** DUP3(050311)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513028
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0196
Comment:

Sample #: 110513028-020 **Customer Sample #:** NORTHEAST1(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513028-021 **Customer Sample #:** NORTHEAST1(1-1.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	5.0
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH#1(0-0.5)	W1E0196-01	Soil	02-May-11 12:10	10-May-2011
NORTH#1(1.5-2)	W1E0196-02	Soil	02-May-11 13:00	10-May-2011
NORTH#2(0-.5)	W1E0196-03	Soil	02-May-11 13:25	10-May-2011
NORTH#2(1-1.5)	W1E0196-04	Soil	02-May-11 14:00	10-May-2011
NORTH#3(0-0.5)	W1E0196-05	Soil	02-May-11 14:20	10-May-2011
NORTH#3(1.5-2)	W1E0196-06	Soil	02-May-11 14:50	10-May-2011
NORTH REF1(0-0.5)	W1E0196-07	Soil	02-May-11 15:20	10-May-2011
NORTH REF1(1.5-2)	W1E0196-08	Soil	02-May-11 16:10	10-May-2011
NORTH REF2(0-0.5)	W1E0196-09	Soil	02-May-11 16:35	10-May-2011
NORTH REF2(1.5-2)	W1E0196-10	Soil	02-May-11 17:10	10-May-2011
WEST#1(0-0.5)	W1E0196-11	Soil	02-May-11 18:30	10-May-2011
WEST#1(1.5-2)	W1E0196-12	Soil	03-May-11 08:20	10-May-2011
WEST#2(0-0.5)	W1E0196-13	Soil	03-May-11 08:35	10-May-2011
WEST#2(1-1.5)	W1E0196-14	Soil	03-May-11 09:00	10-May-2011
WEST#3(0-0.5)	W1E0196-15	Soil	03-May-11 09:15	10-May-2011
WEST#3(1.5-2)	W1E0196-16	Soil	03-May-11 09:45	10-May-2011
DUP1(050311)	W1E0196-17	Soil	03-May-11 00:00	10-May-2011
DUP2(050311)	W1E0196-18	Soil	03-May-11 00:00	10-May-2011
DUP3(050311)	W1E0196-19	Soil	03-May-11 00:00	10-May-2011
NORTHEAST1(0-0.5)	W1E0196-20	Soil	03-May-11 10:45	10-May-2011
NORTHEAST1(1-1.5)	W1E0196-21	Soil	03-May-11 11:10	10-May-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

06/24/11mab: Report reissued. Revised case narrative.

05/26/11 (jk) - Modified SPLP extraction was used as per client instruction.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH#1(0-0.5)**
SVL Sample ID: **W1E0196-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 12:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6440	mg/kg	4.0	0.5		W120269	DT	05/20/11 14:06	
EPA 6010B	**Copper**	1810	mg/kg	1.00	0.16		W120269	DT	05/20/11 14:08	
EPA 6010B	**Potassium**	3330	mg/kg	50.0	8.70		W120269	DT	05/20/11 14:06	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	14.8	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:02	
EPA 353.2	**Nitrate/Nitrite as N**	64.5	mg/kg	2.50	0.75	5	W122053	TJK	05/25/11 16:04	D2
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.08	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.447	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 13:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH#1(1.5-2)**
SVL Sample ID: **W1E0196-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 13:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8670	mg/kg	4.0	0.5		W120269	DT	05/20/11 14:27	
EPA 6010B	**Copper**	75.7	mg/kg	1.00	0.16		W120269	DT	05/20/11 14:28	
EPA 6010B	**Potassium**	2260	mg/kg	50.0	8.70		W120269	DT	05/20/11 14:27	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:03	
EPA 353.2	**Nitrate/Nitrite as N**	4.64	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:36	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.68	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 13:38	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH#2(0-.5)**
SVL Sample ID: **W1E0196-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 13:25
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7410	mg/kg	4.0	0.5		W120269	DT	05/20/11 14:32	
EPA 6010B	**Copper**	531	mg/kg	1.00	0.16		W120269	DT	05/20/11 14:34	
EPA 6010B	**Potassium**	3550	mg/kg	50.0	8.70		W120269	DT	05/20/11 14:32	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.45	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:04	
EPA 353.2	**Nitrate/Nitrite as N**	8.97	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:37	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.93	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.251	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 13:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH#2(1-1.5)**
SVL Sample ID: **W1E0196-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 14:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6770	mg/kg	4.0	0.5		W120269	DT	05/20/11 14:38	
EPA 6010B	**Copper**	61.6	mg/kg	1.00	0.16		W120269	DT	05/20/11 14:39	
EPA 6010B	**Potassium**	2750	mg/kg	50.0	8.70		W120269	DT	05/20/11 14:38	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:06	
EPA 353.2	**Nitrate/Nitrite as N**	11.9	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:38	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.09	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 13:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH#3(0-0.5)**
SVL Sample ID: **W1E0196-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 14:20
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8250	mg/kg	4.0	0.5		W120269	DT	05/20/11 14:43	
EPA 6010B	**Copper**	946	mg/kg	1.00	0.16		W120269	DT	05/20/11 14:45	
EPA 6010B	**Potassium**	2980	mg/kg	50.0	8.70		W120269	DT	05/20/11 14:43	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.53	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:07	
EPA 353.2	**Nitrate/Nitrite as N**	4.21	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:39	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.32	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.878	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 13:55	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH#3(1.5-2)**
SVL Sample ID: **W1E0196-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 14:50
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8840	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:00	
EPA 6010B	**Copper**	58.6	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:01	
EPA 6010B	**Potassium**	1740	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:00	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:08	
EPA 353.2	**Nitrate/Nitrite as N**	0.67	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:40	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.82	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 14:02	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH REF1(0-0.5)**
SVL Sample ID: **W1E0196-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 15:20
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5490	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:05	
EPA 6010B	**Copper**	483	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:07	
EPA 6010B	**Potassium**	3190	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:05	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:10	
EPA 353.2	**Nitrate/Nitrite as N**	1.24	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:41	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	6.68	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.060	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 14:19	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH REF1(1.5-2)**
SVL Sample ID: **W1E0196-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 16:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	19100	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:11	
EPA 6010B	**Copper**	58.1	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:12	
EPA 6010B	**Potassium**	3120	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:11	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:11	
EPA 353.2	**Nitrate/Nitrite as N**	0.60	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:42	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.30	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 14:24	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH REF2(0-0.5)**
SVL Sample ID: **W1E0196-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 16:35
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	3720	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:16	
EPA 6010B	**Copper**	1170	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:18	
EPA 6010B	**Potassium**	3450	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:16	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.74	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:12	
EPA 353.2	**Nitrate/Nitrite as N**	2.58	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:43	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SW-846 1312	**Final Fluid pH**	5.87	pH Units				W120262	ESB	05/17/11 08:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	1.76	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 14:30	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTH REF2(1.5-2)**
SVL Sample ID: **W1E0196-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 17:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	12800	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:22	
EPA 6010B	**Copper**	100	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:23	
EPA 6010B	**Potassium**	4540	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:22	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:14	
EPA 353.2	**Nitrate/Nitrite as N**	1.80	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:48	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.35	pH Units				W120262	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121297	AS	05/21/11 14:36	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **WEST#1(0-0.5)**
SVL Sample ID: **W1E0196-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 18:30
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6530	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:27	
EPA 6010B	**Copper**	2120	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:28	
EPA 6010B	**Potassium**	2420	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:27	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:20	
EPA 353.2	**Nitrate/Nitrite as N**	0.90	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:49	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.61	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.069	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 14:59	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **WEST#1(1.5-2)**
SVL Sample ID: **W1E0196-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 08:20
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	57500	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:33	
EPA 6010B	**Copper**	245	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:34	
EPA 6010B	**Potassium**	2870	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:33	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:22	
EPA 353.2	**Nitrate/Nitrite as N**	1.38	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:51	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SW-846 1312	**Final Fluid pH**	8.13	pH Units				W120263	ESB	05/17/11 08:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 15:28	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **WEST#2(0-0.5)**
SVL Sample ID: **W1E0196-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 08:35
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7280	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:38	
EPA 6010B	**Copper**	2020	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:39	
EPA 6010B	**Potassium**	3150	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:38	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.45	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:23	
EPA 353.2	**Nitrate/Nitrite as N**	2.59	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:52	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.88	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.096	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 15:34	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **WEST#2(1-1.5)**
SVL Sample ID: **W1E0196-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 09:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	64900	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:44	
EPA 6010B	**Copper**	311	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:45	
EPA 6010B	**Potassium**	3600	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:44	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:24	
EPA 353.2	**Nitrate/Nitrite as N**	1.15	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:53	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	8.02	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 15:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0196**
Bayard, NM 88023	Reported: 24-Jun-11 13:49

Client Sample ID: **WEST#3(0-0.5)**
SVL Sample ID: **W1E0196-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 09:15
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4550	mg/kg	4.0	0.5		W120269	DT	05/20/11 15:49	
EPA 6010B	**Copper**	1030	mg/kg	1.00	0.16		W120269	DT	05/20/11 15:51	
EPA 6010B	**Potassium**	2530	mg/kg	50.0	8.70		W120269	DT	05/20/11 15:49	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.73	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:26	
EPA 353.2	**Nitrate/Nitrite as N**	2.87	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:54	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.43	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.090	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 15:46	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **WEST#3(1.5-2)**
SVL Sample ID: **W1E0196-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 09:45
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	101000	mg/kg	40.0	4.6	10	W120269	AS	05/21/11 08:57	D2
EPA 6010B	**Copper**	227	mg/kg	1.00	0.16		W120269	DT	05/20/11 16:07	
EPA 6010B	**Potassium**	2120	mg/kg	50.0	8.70		W120269	DT	05/20/11 16:05	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:27	
EPA 353.2	**Nitrate/Nitrite as N**	1.64	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:55	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.88	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 15:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **DUP1(050311)**
SVL Sample ID: **W1E0196-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6730	mg/kg	4.0	0.5		W120269	DT	05/20/11 16:11	
EPA 6010B	**Copper**	1710	mg/kg	1.00	0.16		W120269	DT	05/20/11 16:12	
EPA 6010B	**Potassium**	3340	mg/kg	50.0	8.70		W120269	DT	05/20/11 16:11	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.44	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:28	
EPA 353.2	**Nitrate/Nitrite as N**	3.13	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:56	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.69	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.094	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 15:58	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **DUP2(050311)**
SVL Sample ID: **W1E0196-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8380	mg/kg	4.0	0.5		W120269	DT	05/20/11 16:16	
EPA 6010B	**Copper**	1010	mg/kg	1.00	0.16		W120269	DT	05/20/11 16:18	
EPA 6010B	**Potassium**	2480	mg/kg	50.0	8.70		W120269	DT	05/20/11 16:16	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.52	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:30	
EPA 353.2	**Nitrate/Nitrite as N**	2.16	mg/kg	0.50	0.15		W122053	TJK	05/25/11 15:57	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.56	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.078	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 16:04	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **DUP3(050311)**
SVL Sample ID: **W1E0196-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5580	mg/kg	4.0	0.5		W120269	DT	05/20/11 16:22	
EPA 6010B	**Copper**	626	mg/kg	1.00	0.16		W120269	DT	05/20/11 16:23	
EPA 6010B	**Potassium**	4070	mg/kg	50.0	8.70		W120269	DT	05/20/11 16:22	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.90	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:31	
EPA 353.2	**Nitrate/Nitrite as N**	4.42	mg/kg	0.50	0.15		W122053	TJK	05/25/11 16:02	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.11	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.131	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 16:09	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTHEAST1(0-0.5)**
SVL Sample ID: **W1E0196-20 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 10:45
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5830	mg/kg	4.0	0.5		W120269	DT	05/20/11 16:27	
EPA 6010B	**Copper**	475	mg/kg	1.00	0.16		W120269	DT	05/20/11 16:28	
EPA 6010B	**Potassium**	4140	mg/kg	50.0	8.70		W120269	DT	05/20/11 16:27	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.06	mg/kg	0.30	0.13		W122055	CFF	05/25/11 17:32	
EPA 353.2	**Nitrate/Nitrite as N**	4.19	mg/kg	0.50	0.15		W122053	TJK	05/25/11 16:03	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.00	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.132	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 16:15	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Client Sample ID: **NORTHEAST1(1-1.5)**
SVL Sample ID: **W1E0196-21 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 11:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6940	mg/kg	4.0	0.5		W120270	DT	05/20/11 09:50	
EPA 6010B	**Copper**	43.7	mg/kg	1.00	0.16		W120270	DT	05/20/11 09:52	
EPA 6010B	**Potassium**	4840	mg/kg	50.0	8.70		W120270	DT	05/20/11 09:50	
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	< 0.30	mg/kg	0.30	0.13		W122054	CFF	05/25/11 16:12	
EPA 353.2	**Nitrate/Nitrite as N**	2.92	mg/kg	0.50	0.15		W122052	TJK	05/25/11 14:56	
SPLP Extraction Parameters										
SW-846 1312	**Final Fluid pH**	7.47	pH Units				W120263	ESB	05/17/11 08:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.010	mg/L Extract	0.010	0.005		W121298	AS	05/21/11 16:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	<4.0	0.5	4.0	W120269	20-May-11	
EPA 6010B	Calcium	mg/kg	<4.0	0.5	4.0	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	<1.00	0.16	1.00	W120269	20-May-11	
EPA 6010B	Copper	mg/kg	<1.00	0.16	1.00	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W120269	20-May-11	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W120270	20-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	<0.30	0.13	0.30	W122054	25-May-11	
EPA 350.1	Ammonia as N	mg/kg	<0.30	0.13	0.30	W122055	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.50	0.15	0.50	W122052	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.50	0.15	0.50	W122053	25-May-11	

SPLP Extraction Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
SW-846 1312	Final Fluid pH	pH Units	5.53			W120262	17-May-11	
SW-846 1312	Final Fluid pH	pH Units	5.53			W120263	17-May-11	

SPLP Leachates (Metals)

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	<0.010	0.005	0.010	W121297	21-May-11	
EPA 6010B	Copper	mg/L Extract	<0.010	0.005	0.010	W121298	21-May-11	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	1970	2000	98.5	80 - 120	W120270	20-May-11	
EPA 6010B	Calcium	mg/kg	1980	2000	99.0	80 - 120	W120269	20-May-11	
EPA 6010B	Copper	mg/kg	95.4	100	95.4	80 - 120	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	100	100	100	80 - 120	W120269	20-May-11	
EPA 6010B	Potassium	mg/kg	1900	2000	95.0	80 - 120	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	2090	2000	104	80 - 120	W120269	20-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/L	1.58	1.65	95.5	80 - 120	W122054	25-May-11	
EPA 350.1	Ammonia as N	mg/L	1.59	1.65	96.5	80 - 120	W122055	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/L	2.11	2.34	90.1	80 - 120	W122052	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/L	2.17	2.34	92.6	80 - 120	W122053	25-May-11	

SPLP Leachates (Metals)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	0.940	1.00	94.0	80 - 120	W121297	21-May-11	
EPA 6010B	Copper	mg/L Extract	0.913	1.00	91.3	80 - 120	W121298	21-May-11	

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	<0.30	<0.30	UDL	20	W122054	25-May-11	
EPA 350.1	Ammonia as N	mg/kg	14.8	14.8	0.1	20	W122055	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	2.89	2.92	0.9	20	W122052	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	67.7	64.5	4.8	20	W122053	25-May-11	D2

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	7890	6940	2000	47.9	75 - 125	W120270	20-May-11	M2
EPA 6010B	Calcium	mg/kg	9160	6440	2000	136	75 - 125	W120269	20-May-11	M1
EPA 6010B	Copper	mg/kg	151	43.7	100	108	75 - 125	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	2290	1810	100	R > 4S	75 - 125	W120269	20-May-11	M3
EPA 6010B	Potassium	mg/kg	7180	4840	2000	117	75 - 125	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	6170	3330	2000	142	75 - 125	W120269	20-May-11	M1
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	mg/kg	0.90	<0.30	5.00	18.0	90 - 110	W122054	25-May-11	M2
EPA 350.1	Ammonia as N	mg/kg	0.64	<0.30	5.00	7.99	90 - 110	W122054	25-May-11	M2
EPA 350.1	Ammonia as N	mg/kg	17.0	14.8	5.00	43.8	90 - 110	W122055	25-May-11	M2
EPA 350.1	Ammonia as N	mg/kg	1.67	<0.30	5.00	33.3	90 - 110	W122055	25-May-11	M2
EPA 353.2	Nitrate/Nitrite as N	mg/kg	11.8	2.92	10.0	88.7	75 - 125	W122052	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	11.6	2.94	10.0	86.1	75 - 125	W122052	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	9.80	0.90	10.0	89.0	75 - 125	W122053	25-May-11	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	71.7	64.5	10.0	R > 4S	75 - 125	W122053	25-May-11	D2,M3
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	1.42	0.447	1.00	97.0	75 - 125	W121297	21-May-11	
EPA 6010B	Copper	mg/L Extract	0.991	0.069	1.00	92.2	75 - 125	W121298	21-May-11	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	8560	9160	2000	6.8	20	W120269	20-May-11	
EPA 6010B	Calcium	mg/kg	8000	7890	2000	1.3	20	W120270	20-May-11	
EPA 6010B	Copper	mg/kg	2220	2290	100	3.3	20	W120269	20-May-11	
EPA 6010B	Copper	mg/kg	129	151	100	16.2	20	W120270	20-May-11	
EPA 6010B	Potassium	mg/kg	6100	6170	2000	1.2	20	W120269	20-May-11	
EPA 6010B	Potassium	mg/kg	7060	7180	2000	1.7	20	W120270	20-May-11	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	1.39	1.42	1.00	2.0	20	W121297	21-May-11	
EPA 6010B	Copper	mg/L Extract	0.997	0.991	1.00	0.7	20	W121298	21-May-11	

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0196**
Reported: 24-Jun-11 13:49

Quality Control - POST DIGESTION SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	7900	6440	2000	72.9	75 - 125	W120269	20-May-11	M2
EPA 6010B	Calcium	mg/kg	8430	6940	2000	74.8	75 - 125	W120270	20-May-11	M2
EPA 6010B	Potassium	mg/kg	4980	3330	2000	82.3	75 - 125	W120269	20-May-11	

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

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Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-001	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST2(0-0.5)	**Sampling Time**	11:30 AM		
Matrix	Soil	**Sample Location**	W1E0197-01		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1220	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	3.3	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-002	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST2(1.5-2)	**Sampling Time**	11:55 AM		
Matrix	Soil	**Sample Location**	W1E0197-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	803	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	17.7	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-003	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST3(0-0.5)	**Sampling Time**	12:20 PM		
Matrix	Soil	**Sample Location**	W1E0197-03		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1940	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	1.3	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-004	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST3(1.5-2)	**Sampling Time**	12:40 PM		
Matrix	Soil	**Sample Location**	W1E0197-04		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	780	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	12.6	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-005	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST REF1(0-.5)	**Sampling Time**	1:10 PM		
Matrix	Soil	**Sample Location**	W1E0197-05		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1250	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	1.6	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-006	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST REF1(1-1.5)	**Sampling Time**	1:25 PM		
Matrix	Soil	**Sample Location**	W1E0197-06		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1400	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	13.5	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-007	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST REF2(0-0.5)	**Sampling Time**	1:55 PM		
Matrix	Soil	**Sample Location**	W1E0197-07		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1530	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	2	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-008	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	NORTHEAST REF2(1-1.5)	**Sampling Time**	2:15 PM		
Matrix	Soil	**Sample Location**	W1E0197-08		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	866	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	13.8	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-009	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	DUP4(050311)	**Sampling Time**			
Matrix	Soil	**Sample Location**	W1E0197-09		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1970	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	1.9	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-010	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST#1(0-0.5)	**Sampling Time**	3:10 PM		
Matrix	Soil	**Sample Location**	W1E0197-10		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	2270	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	1.9	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-011	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST#1(1-1.5)	**Sampling Time**	3:30 PM		
Matrix	Soil	**Sample Location**	W1E0197-11		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1440	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	12.1	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-012	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST#2(0-0.5)	**Sampling Time**	3:15 PM		
Matrix	Soil	**Sample Location**	W1E0197-12		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	3360	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	3.8	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-013	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST#2(0.5-1.0)	**Sampling Time**	3:55 PM		
Matrix	Soil	**Sample Location**	W1E0197-13		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1090	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	13.1	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-014	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST#3(0-0.5)	**Sampling Time**	4:10 PM		
Matrix	Soil	**Sample Location**	W1E0197-14		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1670	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	3.8	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-015	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST#3(1.5-2)	**Sampling Time**	4:25 PM		
Matrix	Soil	**Sample Location**	W1E0197-15		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	662	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	13.1	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-016	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST REF1(0-0.5)	**Sampling Time**	4:40 PM		
Matrix	Soil	**Sample Location**	W1E0197-16		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	821	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	1.7	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-017	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST REF1(0.5-1.0)	**Sampling Time**	4:50 PM		
Matrix	Soil	**Sample Location**	W1E0197-17		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1060	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	5.4	Percent		5/17/2011	CAA	%moisture	

Sample Number	110513029-018	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST REF2(0-0.5)	**Sampling Time**	4:55 PM		
Matrix	Soil	**Sample Location**	W1E0197-18		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	560	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	2.5	Percent		5/17/2011	CAA	%moisture	

Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10 BAYARD, NM 88023	**Project Name:**	SVL #W1E0197
Attn:	PAM PINSON		

Analytical Results Report

Sample Number	110513029-019	**Sampling Date**	5/3/2011	**Date/Time Received**	5/13/2011 11:40 AM
Client Sample ID	EAST REF2(0.5-1.0)	**Sampling Time**	5:05 PM		
Matrix	Soil	**Sample Location**	W1E0197-19		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	296	mg/Kg	50	5/25/2011	CRW	SM4500NORGC	
%moisture	5.1	Percent		5/17/2011	CAA	%moisture	

Authorized Signature

John Coddington, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client:	FREEPORT MCMORAN - CHINO MINES	**Batch #:**	110513029
Address:	PO BOX 10	**Project Name:**	SVL #W1E0197
	BAYARD, NM 88023		
Attn:	PAM PINSON		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TKN	4.96	mg/kg	5	99.2	80-120	5/25/2011	5/25/2011

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
110513029-001	TKN	1220	2300	mg/Kg	994	108.7	70-130	5/25/2011	5/25/2011

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TKN	2360	mg/Kg	1026	111.1	2.6	0-20	5/25/2011	5/25/2011

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
TKN	ND	mg/Kg	25	5/25/2011	5/25/2011

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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Login Report

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513029
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0197
Comment:

Sample #: 110513029-001 **Customer Sample #:** NORTHEAST2(0-0.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-002 **Customer Sample #:** NORTHEAST2(1.5-2)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-003 **Customer Sample #:** NORTHEAST3(0-0.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A

Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513029

Order Date: 5/13/2011

Contact Name: PAM PINSON

Project Name: SVL #W1E0197

Comment:

Sample #: 110513029-004 **Customer Sample #:** NORTHEAST3(1.5-2)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-005 **Customer Sample #:** NORTHEAST REF1(0-.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-006 **Customer Sample #:** NORTHEAST REF1(1-1.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-007 **Customer Sample #:** NORTHEAST REF2(0-0.5)

Recv'd:	☑	**Collector:**		**Date Collected:**	5/3/2011
Quantity:	1	**Matrix:**	Soil	**Date Received:**	5/13/2011 11:40:00 A
Comment:					

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513029
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0197
Comment:

Sample #: 110513029-008 **Customer Sample #:** NORTHEAST REF2(1-1.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-009 **Customer Sample #:** DUP4(050311)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-010 **Customer Sample #:** EAST#1(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-011 **Customer Sample #:** EAST#1(1-1.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513029
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0197
Comment:

Sample #: 110513029-012 **Customer Sample #:** EAST#2(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-013 **Customer Sample #:** EAST#2(0.5-1.0)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-014 **Customer Sample #:** EAST#3(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-015 **Customer Sample #:** EAST#3(1.5-2)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513029
Order Date: 5/13/2011

Contact Name: PAM PINSON
Project Name: SVL #W1E0197
Comment:

Sample #: 110513029-016 **Customer Sample #:** EAST REF1(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-017 **Customer Sample #:** EAST REF1(0.5-1.0)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-018 **Customer Sample #:** EAST REF2(0-0.5)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Sample #: 110513029-019 **Customer Sample #:** EAST REF2(0.5-1.0)

Recv'd: ☑ **Collector:** **Date Collected:** 5/3/2011
Quantity: 1 **Matrix:** Soil **Date Received:** 5/13/2011 11:40:00 A
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	5/25/2011	***Normal (6-10 Days)***
TKN	M	SM4500NORGC	5/25/2011	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN - CHINO MINES
PO BOX 10
BAYARD NM 88023

Order ID: 110513029

Order Date: 5/13/2011

Contact Name: PAM PINSON

Project Name: SVL #W1E0197

Comment:

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	5.0
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH#1(0-0.5)	W1E0251-01	Soil	02-May-11 12:10	10-May-2011
NORTH#1(1.5-2)	W1E0251-02	Soil	02-May-11 13:00	10-May-2011
NORTH#2(0-.5)	W1E0251-03	Soil	02-May-11 13:25	10-May-2011
NORTH#2(1-1.5)	W1E0251-04	Soil	02-May-11 14:00	10-May-2011
NORTH#3(0-0.5)	W1E0251-05	Soil	02-May-11 14:20	10-May-2011
NORTH#3(1.5-2)	W1E0251-06	Soil	02-May-11 14:50	10-May-2011
NORTH REF1(0-0.5)	W1E0251-07	Soil	02-May-11 15:20	10-May-2011
NORTH REF1(1.5-2)	W1E0251-08	Soil	02-May-11 16:10	10-May-2011
NORTH REF2(0-0.5)	W1E0251-09	Soil	02-May-11 16:35	10-May-2011
NORTH REF2(1.5-2)	W1E0251-10	Soil	02-May-11 17:10	10-May-2011
WEST#1(0-0.5)	W1E0251-11	Soil	02-May-11 18:30	10-May-2011
WEST#1(1.5-2)	W1E0251-12	Soil	03-May-11 08:20	10-May-2011
WEST#2(0-0.5)	W1E0251-13	Soil	03-May-11 08:35	10-May-2011
WEST#2(1-1.5)	W1E0251-14	Soil	03-May-11 09:00	10-May-2011
WEST#3(0-0.5)	W1E0251-15	Soil	03-May-11 09:15	10-May-2011
WEST#3(1.5-2)	W1E0251-16	Soil	03-May-11 09:45	10-May-2011
DUP1(050311)	W1E0251-17	Soil	03-May-11 00:00	10-May-2011
DUP2(050311)	W1E0251-18	Soil	03-May-11 00:00	10-May-2011
DUP3(050311)	W1E0251-19	Soil	03-May-11 00:00	10-May-2011
NORTHEAST1(0-0.5)	W1E0251-20	Soil	03-May-11 10:45	10-May-2011
NORTHEAST1(1-1.5)	W1E0251-21	Soil	03-May-11 11:10	10-May-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

05/24/11 (jk) - All analyses performed on sieved material.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH#1(0-0.5)**
SVL Sample ID: **W1E0251-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 12:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2050	mg/kg	1.00	0.16		W120275	AS	05/22/11 08:38	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.4°C**	5.59	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	2.67	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	4.61	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0251**
Bayard, NM 88023	Reported: 24-May-11 14:08

Client Sample ID: **NORTH#1(1.5-2)**
SVL Sample ID: **W1E0251-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 13:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	236	mg/kg	1.00	0.16		W120275	AS	05/22/11 08:56	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.7°C**	7.25	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.608	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.05	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH#2(0-.5)**
SVL Sample ID: **W1E0251-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 13:25
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	752	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:01	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.0°C**	6.54	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.89	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	3.26	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH#2(1-1.5)**
SVL Sample ID: **W1E0251-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 14:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	123	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:07	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.8°C**	6.88	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.722	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.24	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0251**
Bayard, NM 88023	Reported: 24-May-11 14:08

Client Sample ID: **NORTH#3(0-0.5)**
SVL Sample ID: **W1E0251-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 14:20
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2050	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:12	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.6°C**	5.55	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.31	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	2.26	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH#3(1.5-2)**
SVL Sample ID: **W1E0251-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 14:50
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	143	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:18	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.9°C**	7.27	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.421	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	0.726	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH REF1(0-0.5)**
SVL Sample ID: **W1E0251-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 15:20
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	900	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:35	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 9045C	**pH @24.1°C**	6.35	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.940	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.62	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH REF1(1.5-2)**
SVL Sample ID: **W1E0251-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 16:10
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	84.8	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:41	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 9045C	**pH @23.9°C**	7.98	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.397	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	0.685	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH REF2(0-0.5)**
SVL Sample ID: **W1E0251-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 16:35
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1490	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:46	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.4°C**	5.09	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.766	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.32	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTH REF2(1.5-2)**
SVL Sample ID: **W1E0251-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 17:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	234	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:51	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.7°C**	7.55	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.371	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	0.640	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **WEST#1(0-0.5)**
SVL Sample ID: **W1E0251-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 02-May-11 18:30
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2090	mg/kg	1.00	0.16		W120275	AS	05/22/11 09:57	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.2°C**	7.64	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.14	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.97	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **WEST#1(1.5-2)**
SVL Sample ID: **W1E0251-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 08:20
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	314	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:03	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.1°C**	7.85	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	0.883	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.52	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **WEST#2(0-0.5)**
SVL Sample ID: **W1E0251-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 08:35
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	3560	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:09	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 9045C	**pH @24.0°C**	7.67	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	2.33	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	4.02	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **WEST#2(1-1.5)**
SVL Sample ID: **W1E0251-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 09:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	637	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:15	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.0°C**	7.85	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.14	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.97	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **WEST#3(0-0.5)**
SVL Sample ID: **W1E0251-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 09:15
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1130	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:21	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.2°C**	7.32	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.67	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	2.89	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **WEST#3(1.5-2)**
SVL Sample ID: **W1E0251-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 09:45
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	319	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:27	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.2°C**	7.73	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.04	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	1.80	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

SVL holds the following certifications: **AZ**:0538, **CA**:2080, **CO**:ID00019, **FL**(**NELAC**):E87993, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **WA**:1268, **WY**:ID00019

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **DUP1(050311)**
SVL Sample ID: **W1E0251-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2800	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:43	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.0°C**	7.73	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	2.40	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	4.13	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **DUP2(050311)**
SVL Sample ID: **W1E0251-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1300	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:49	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.0°C**	7.39	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.30	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	2.24	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **DUP3(050311)**
SVL Sample ID: **W1E0251-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	624	mg/kg	1.00	0.16		W120275	AS	05/22/11 10:55	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.0°C**	6.49	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.59	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	2.74	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0251**
Bayard, NM 88023	Reported: 24-May-11 14:08

Client Sample ID: **NORTHEAST1(0-0.5)**
SVL Sample ID: **W1E0251-20 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 10:45
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	580	mg/kg	1.00	0.16		W120275	AS	05/22/11 11:01	
Classical Chemistry Parameters										
EPA 9045C	**pH @24.1°C**	6.59	pH Units				W121229	AGF	05/18/11 14:30	
USDA HB60(24)	**Total Organic Carbon**	1.73	%	0.0900	0.0180		W121392	SM	05/23/11 10:00	
USDA HB60(24)	**Total Organic Matter**	2.98	%	0.150	0.0310		W121392	SM	05/23/11 10:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Client Sample ID: **NORTHEAST1(1-1.5)**
SVL Sample ID: **W1E0251-21 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 11:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	56.7	mg/kg	1.00	0.16		W120276	AS	05/21/11 08:52	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.9°C**	7.29	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	0.807	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.39	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0251**
Reported: 24-May-11 14:08

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	<1.00	0.16	1.00	W120275	22-May-11	
EPA 6010B	Copper	mg/kg	<1.00	0.16	1.00	W120276	21-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
USDA HB60(24)	Total Organic Matter	%	<0.150	0.0310	0.150	W121391	23-May-11	
USDA HB60(24)	Total Organic Matter	%	<0.150	0.0310	0.150	W121392	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	<0.0900	0.0180	0.0900	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	<0.0900	0.0180	0.0900	W121392	23-May-11	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	101	100	101	80 - 120	W120276	21-May-11	
EPA 6010B	Copper	mg/kg	95.1	100	95.1	80 - 120	W120275	22-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 9045C	pH	pH Units	8.31	8.42	98.7	94.7 - 105.3	W121229	18-May-11	
EPA 9045C	pH	pH Units	8.26	8.42	98.1	94.7 - 105.3	W121230	19-May-11	
USDA HB60(24)	Total Organic Matter	%	0.491	0.464	106	80 - 120	W121391	23-May-11	
USDA HB60(24)	Total Organic Matter	%	0.491	0.464	106	80 - 120	W121392	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	0.285	0.269	106	80 - 120	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	0.285	0.269	106	80 - 120	W121392	23-May-11	

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 9045C	pH	pH Units	5.56	5.59	0.5	20	W121229	18-May-11	
EPA 9045C	pH	pH Units	5.92	5.51	7.2	20	W121230	19-May-11	
USDA HB60(24)	Total Organic Matter	%	2.72	2.87	5.4	20	W121391	23-May-11	
USDA HB60(24)	Total Organic Matter	%	4.62	4.61	0.4	20	W121392	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	1.58	1.66	5.4	20	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	2.68	2.67	0.4	20	W121392	23-May-11	

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0251**
Bayard, NM 88023	Reported: 24-May-11 14:08

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Copper	mg/kg	163	56.7	100	107	75 - 125	W120276	21-May-11	
EPA 6010B	Copper	mg/kg	2170	2050	100	117	75 - 125	W120275	22-May-11	M3
Classical Chemistry Parameters										
USDA HB60(24)	Total Organic Matter	%	5.39	2.87	2.92	86.4	75 - 125	W121391	23-May-11	
USDA HB60(24)	Total Organic Matter	%	7.54	4.61	2.92	101	75 - 125	W121392	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	3.13	1.66	1.69	86.6	75 - 125	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	4.37	2.67	1.69	101	75 - 125	W121392	23-May-11	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Copper	mg/kg	2250	2170	100	3.8	20	W120275	22-May-11	
EPA 6010B	Copper	mg/kg	155	163	100	5.5	20	W120276	21-May-11	

Notes and Definitions

M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0257**
Bayard, NM 88023	Reported: 24-May-11 15:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTHEAST2(0-0.5)	W1E0257-01	Soil	03-May-11 11:30	10-May-2011
NORTHEAST2(1.5-2)	W1E0257-02	Soil	03-May-11 11:55	10-May-2011
NORTHEAST3(0-0.5)	W1E0257-03	Soil	03-May-11 12:20	10-May-2011
NORTHEAST3(1.5-2)	W1E0257-04	Soil	03-May-11 12:40	10-May-2011
NORTHEAST REF1(0-.5)	W1E0257-05	Soil	03-May-11 13:10	10-May-2011
NORTHEAST REF1(1-1.5)	W1E0257-06	Soil	03-May-11 13:25	10-May-2011
NORTHEAST REF2(0-0.5)	W1E0257-07	Soil	03-May-11 13:55	10-May-2011
NORTHEAST REF2(1-1.5)	W1E0257-08	Soil	03-May-11 14:15	10-May-2011
DUP4(050311)	W1E0257-09	Soil	03-May-11 00:00	10-May-2011
EAST#1(0-0.5)	W1E0257-10	Soil	03-May-11 15:10	10-May-2011
EAST#1(1-1.5)	W1E0257-11	Soil	03-May-11 15:30	10-May-2011
EAST#2(0-0.5)	W1E0257-12	Soil	03-May-11 15:15	10-May-2011
EAST#2(0.5-1.0)	W1E0257-13	Soil	03-May-11 15:55	10-May-2011
EAST#3(0-0.5)	W1E0257-14	Soil	03-May-11 16:10	10-May-2011
EAST#3(1.5-2)	W1E0257-15	Soil	03-May-11 16:25	10-May-2011
EAST REF1(0-0.5)	W1E0257-16	Soil	03-May-11 16:40	10-May-2011
EAST REF1(0.5-1.0)	W1E0257-17	Soil	03-May-11 16:50	10-May-2011
EAST REF2(0-0.5)	W1E0257-18	Soil	03-May-11 16:55	10-May-2011
EAST REF2(0.5-1.0)	W1E0257-19	Soil	03-May-11 17:05	10-May-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

05/24/11 (jk) - All analyses performed on sieved material.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST2(0-0.5)**
SVL Sample ID: **W1E0257-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 11:30
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2960	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:09	
Classical Chemistry Parameters										
EPA 9045C	**pH @23.0°C**	5.51	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.66	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	2.87	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST2(1.5-2)**
SVL Sample ID: **W1E0257-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 11:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	822	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:15	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	7.01	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.12	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.92	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST3(0-0.5)**
SVL Sample ID: **W1E0257-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 12:20
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	2130	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:21	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 9045C	**pH @22.5°C**	6.41	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	3.15	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	5.43	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST3(1.5-2)**
SVL Sample ID: **W1E0257-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 12:40
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	457	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:27	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.8°C**	6.80	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.02	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.76	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W1E0257**
Bayard, NM 88023	Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST REF1(0-.5)**
SVL Sample ID: **W1E0257-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 13:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2570	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:33	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.4°C**	4.43	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	2.59	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	4.46	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST REF1(1-1.5)**
SVL Sample ID: **W1E0257-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 13:25
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	752	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:50	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.7°C**	5.92	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.52	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	2.62	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST REF2(0-0.5)**
SVL Sample ID: **W1E0257-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 13:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	3040	mg/kg	1.00	0.16		W120276	AS	05/21/11 09:56	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	4.72	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	3.25	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	5.61	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **NORTHEAST REF2(1-1.5)**
SVL Sample ID: **W1E0257-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 14:15
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	754	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:02	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	6.44	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	0.884	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.52	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **DUP4(050311)**
SVL Sample ID: **W1E0257-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 00:00
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1360	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:07	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	7.29	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	4.70	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	8.11	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST#1(0-0.5)**
SVL Sample ID: **W1E0257-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:10
Received: 10-May-11
Sampled By:

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	1250	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:13	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 9045C	**pH @22.6°C**	7.36	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	3.37	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	5.81	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST#1(1-1.5)**
SVL Sample ID: **W1E0257-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:30
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	732	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:19	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.7°C**	6.90	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.95	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	3.35	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST#2(0-0.5)**
SVL Sample ID: **W1E0257-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:15
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	899	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:24	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	7.54	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	3.87	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	6.67	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST#2(0.5-1.0)**
SVL Sample ID: **W1E0257-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 15:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	601	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:30	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.7°C**	7.32	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	2.18	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	3.77	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST#3(0-0.5)**
SVL Sample ID: **W1E0257-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:10
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	717	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:35	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.8°C**	7.70	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	2.21	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	3.81	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST#3(1.5-2)**
SVL Sample ID: **W1E0257-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:25
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	232	mg/kg	1.00	0.16		W120276	AS	05/21/11 10:41	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	7.84	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.58	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	2.72	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST REF1(0-0.5)**
SVL Sample ID: **W1E0257-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:40
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1450	mg/kg	1.00	0.16		W120276	AS	05/21/11 12:14	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.4°C**	5.06	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	0.908	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.56	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST REF1(0.5-1.0)**
SVL Sample ID: **W1E0257-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:50
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1270	mg/kg	1.00	0.16		W120276	AS	05/21/11 12:19	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.7°C**	5.52	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	1.48	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	2.56	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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John Kern

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST REF2(0-0.5)**
SVL Sample ID: **W1E0257-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 16:55
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1200	mg/kg	1.00	0.16		W120276	AS	05/21/11 12:25	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.8°C**	4.68	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	0.906	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.56	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W1E0257**
Reported: 24-May-11 15:33

Client Sample ID: **EAST REF2(0.5-1.0)**
SVL Sample ID: **W1E0257-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 03-May-11 17:05
Received: 10-May-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	953	mg/kg	1.00	0.16		W120276	AS	05/21/11 12:30	
Classical Chemistry Parameters										
EPA 9045C	**pH @22.6°C**	4.82	pH Units				W121230	AGF	05/19/11 10:35	
USDA HB60(24)	**Total Organic Carbon**	0.916	%	0.0900	0.0180		W121391	SM	05/23/11 00:00	
USDA HB60(24)	**Total Organic Matter**	1.58	%	0.150	0.0310		W121391	SM	05/23/11 00:00	

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Laboratory Director

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	<1.00	0.16	1.00	W120276	21-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
USDA HB60(24)	Total Organic Matter	%	<0.150	0.0310	0.150	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	<0.0900	0.0180	0.0900	W121391	23-May-11	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	101	100	101	80 - 120	W120276	21-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 9045C	pH	pH Units	8.26	8.42	98.1	94.7 - 105.3	W121230	19-May-11	
USDA HB60(24)	Total Organic Matter	%	0.491	0.464	106	80 - 120	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	0.285	0.269	106	80 - 120	W121391	23-May-11	

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 9045C	pH	pH Units	5.92	5.51	7.2	20	W121230	19-May-11	
USDA HB60(24)	Total Organic Matter	%	2.72	2.87	5.4	20	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	1.58	1.66	5.4	20	W121391	23-May-11	

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	163	56.7	100	107	75 - 125	W120276	21-May-11	

Classical Chemistry Parameters

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
USDA HB60(24)	Total Organic Matter	%	5.39	2.87	2.92	86.4	75 - 125	W121391	23-May-11	
USDA HB60(24)	Total Organic Carbon	%	3.13	1.66	1.69	86.6	75 - 125	W121391	23-May-11	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Copper	mg/kg	155	163	100	5.5	20	W120276	21-May-11	

Notes and Definitions

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
EAST REF 0-6"	W0D0489-01	Soil	21-Apr-10 13:30	JD	23-Apr-2010
EAST #1 0-6"	W0D0489-02	Soil	21-Apr-10 14:00	JD	23-Apr-2010
EAST #1 15"-21"	W0D0489-03	Soil	21-Apr-10 14:15	JD	23-Apr-2010
EAST #2 0-6"	W0D0489-04	Soil	21-Apr-10 14:25	JD	23-Apr-2010
EAST #2 18"-24"	W0D0489-05	Soil	21-Apr-10 14:40	JD	23-Apr-2010
EAST #3 0-6"	W0D0489-06	Soil	21-Apr-10 14:50	JD	23-Apr-2010
EAST #3 18"-24"	W0D0489-07	Soil	21-Apr-10 15:10	JD	23-Apr-2010
NORTH #1 18-24"	W0D0489-08	Soil	20-Apr-10 15:00	JD	23-Apr-2010
NORTH #2 18"-24"	W0D0489-09	Soil	20-Apr-10 15:45	JD	23-Apr-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).
The guidelines do not pertain to nitric-preserved metals.

Default Cooler (Received Temperature: 15.8°C)

Labnumber	Container	Client ID	Labnumber	Container	Client ID
W0D0489-01 A	Bag, Ziploc	EAST REF 0-6"	W0D0489-01 B	Misc.	EAST REF 0-6"
W0D0489-01 C	Manilla 10-Sieve	EAST REF 0-6"	W0D0489-02 A	Bag, Ziploc	EAST #1 0-6"
W0D0489-02 B	Misc.	EAST #1 0-6"	W0D0489-02 C	Manilla 10-Sieve	EAST #1 0-6"
W0D0489-03 A	Bag, Ziploc	EAST #1 15"-21"	W0D0489-03 B	Misc.	EAST #1 15"-21"
W0D0489-03 C	Manilla 10-Sieve	EAST #1 15"-21"	W0D0489-04 A	Bag, Ziploc	EAST #2 0-6"
W0D0489-04 B	Misc.	EAST #2 0-6"	W0D0489-04 C	Manilla 10-Sieve	EAST #2 0-6"
W0D0489-05 A	Bag, Ziploc	EAST #2 18"-24"	W0D0489-05 B	Misc.	EAST #2 18"-24"
W0D0489-05 C	Manilla 10-Sieve	EAST #2 18"-24"	W0D0489-06 A	Bag, Ziploc	EAST #3 0-6"
W0D0489-06 B	Misc.	EAST #3 0-6"	W0D0489-06 C	Manilla 10-Sieve	EAST #3 0-6"
W0D0489-07 A	Bag, Ziploc	EAST #3 18"-24"	W0D0489-07 B	Misc.	EAST #3 18"-24"
W0D0489-07 C	Manilla 10-Sieve	EAST #3 18"-24"	W0D0489-08 A	Bag, Ziploc	NORTH #1 18-24"
W0D0489-08 B	Misc.	NORTH #1 18-24"	W0D0489-08 C	Manilla 10-Sieve	NORTH #1 18-24"
W0D0489-09 A	Bag, Ziploc	NORTH #2 18"-24"	W0D0489-09 B	Misc.	NORTH #2 18"-24"
W0D0489-09 C	Manilla 10-Sieve	NORTH #2 18"-24"			

Case Narrative

05/12/10mab: TKN is subcontracted

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **EAST REF 0-6"**
SVL Sample ID: **W0D0489-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 13:30
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	2410	mg/kg	4.0	1.0		W018151	AS	05/06/10 14:48	
EPA 6010B	**Copper**	773	mg/kg	1.00	0.21		W018151	AS	05/06/10 14:49	
EPA 6010B	**Potassium**	3040	mg/kg	50.0	4.70		W018151	AS	05/06/10 14:48	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.10	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:25	
EPA 353.2	**Nitrate/Nitrite as N**	4.17	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:31	
EPA 9045C	**pH**	4.87	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.810	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.40	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	4.92	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	3.71	mg/L Extract	0.01	0.006		W019290	DG	05/10/10 12:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0489**
Bayard, NM 88023	Reported: 12-May-10 14:48

Client Sample ID: **EAST #1 0-6"**
SVL Sample ID: **W0D0489-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 14:00
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6150	mg/kg	4.0	1.0		W018151	AS	05/06/10 15:05	
EPA 6010B	**Copper**	744	mg/kg	1.00	0.21		W018151	AS	05/06/10 15:06	
EPA 6010B	**Potassium**	4950	mg/kg	50.0	4.70		W018151	AS	05/06/10 15:05	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.79	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:34	
EPA 353.2	**Nitrate/Nitrite as N**	94.0	mg/kg	2.50	0.850	5	W019270	TJK	05/07/10 16:01	D2
EPA 9045C	**pH**	7.09	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	1.08	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.86	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.91	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.43	mg/L Extract	0.01	0.006		W019290	DG	05/10/10 13:10	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0489**
Bayard, NM 88023	Reported: 12-May-10 14:48

Client Sample ID: **EAST #1 15"-21"**
SVL Sample ID: **W0D0489-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 14:15
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	27900	mg/kg	4.0	1.0		W018151	AS	05/06/10 15:11	
EPA 6010B	**Copper**	128	mg/kg	1.00	0.21		W018151	AS	05/06/10 15:12	
EPA 6010B	**Potassium**	4260	mg/kg	50.0	4.70		W018151	AS	05/06/10 15:11	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	2.45	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:35	
EPA 353.2	**Nitrate/Nitrite as N**	33.5	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:35	
EPA 9045C	**pH**	7.39	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.680	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.17	%	0.150			W019156	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	8.16	pH Units				W019086	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.04	mg/L Extract	0.01	0.006		W019290	DG	05/10/10 13:16	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **EAST #2 0-6"**
SVL Sample ID: **W0D0489-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 14:25
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4890	mg/kg	4.0	1.0		W018151	AS	05/06/10 15:16	
EPA 6010B	**Copper**	307	mg/kg	1.00	0.21		W018151	AS	05/06/10 15:18	
EPA 6010B	**Potassium**	4240	mg/kg	50.0	4.70		W018151	AS	05/06/10 15:16	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.95	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:37	
EPA 353.2	**Nitrate/Nitrite as N**	26.8	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:36	
EPA 9045C	**pH**	7.30	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.860	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.48	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.81	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.09	mg/L Extract	0.01	0.006		W019290	DG	05/10/10 13:22	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **EAST #2 18"-24"**
SVL Sample ID: **W0D0489-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 14:40
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	19400	mg/kg	4.0	1.0		W018151	AS	05/06/10 15:22	
EPA 6010B	**Copper**	85.9	mg/kg	1.00	0.21		W018151	AS	05/06/10 15:23	
EPA 6010B	**Potassium**	5410	mg/kg	50.0	4.70		W018151	AS	05/06/10 15:22	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.87	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:38	
EPA 353.2	**Nitrate/Nitrite as N**	6.30	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:37	
EPA 9045C	**pH**	7.69	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.460	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	0.790	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	8.00	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W019290	DG	05/10/10 13:28	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **EAST #3 0-6"**
SVL Sample ID: **W0D0489-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 14:50
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6820	mg/kg	4.0	1.0		W018151	AS	05/06/10 15:28	
EPA 6010B	**Copper**	859	mg/kg	1.00	0.21		W018151	AS	05/06/10 15:29	
EPA 6010B	**Potassium**	4780	mg/kg	50.0	4.70		W018151	AS	05/06/10 15:28	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.16	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:39	
EPA 353.2	**Nitrate/Nitrite as N**	60.4	mg/kg	2.50	0.850	5	W019270	TJK	05/07/10 16:02	D2
EPA 9045C	**pH**	7.66	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	2.61	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	4.49	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.83	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.38	mg/L Extract	0.01	0.006		W019290	DG	05/10/10 13:34	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **EAST #3 18"-24"**
SVL Sample ID: **W0D0489-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 15:10
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	32200	mg/kg	4.0	1.0		W018151	AS	05/06/10 16:10	
EPA 6010B	**Copper**	70.6	mg/kg	1.00	0.21		W018151	AS	05/06/10 16:11	
EPA 6010B	**Potassium**	4620	mg/kg	50.0	4.70		W018151	AS	05/06/10 16:10	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	2.70	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:41	
EPA 353.2	**Nitrate/Nitrite as N**	37.2	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:43	
EPA 9045C	**pH**	7.61	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.560	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	0.970	%	0.150			W019156	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	8.01	pH Units				W019086	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 15:51	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **NORTH #1 18-24"**
SVL Sample ID: **W0D0489-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 15:00
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	15200	mg/kg	4.0	1.0		W018151	AS	05/06/10 16:16	
EPA 6010B	**Copper**	258	mg/kg	1.00	0.21		W018151	AS	05/06/10 16:17	
EPA 6010B	**Potassium**	2350	mg/kg	50.0	4.70		W018151	AS	05/06/10 16:16	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.54	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:42	
EPA 353.2	**Nitrate/Nitrite as N**	6.67	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:44	
EPA 9045C	**pH**	7.61	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.510	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	0.880	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	8.00	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 15:57	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Client Sample ID: **NORTH #2 18"-24"**
SVL Sample ID: **W0D0489-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 15:45
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	12900	mg/kg	4.0	1.0		W018151	AS	05/06/10 16:21	
EPA 6010B	**Copper**	75.7	mg/kg	1.00	0.21		W018151	AS	05/06/10 16:23	
EPA 6010B	**Potassium**	2090	mg/kg	50.0	4.70		W018151	AS	05/06/10 16:21	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	1.35	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:43	
EPA 353.2	**Nitrate/Nitrite as N**	8.67	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:45	
EPA 9045C	**pH**	7.86	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.520	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	0.900	%	0.150			W019156	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.97	pH Units				W019086	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:02	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010B	Calcium	mg/kg	<4.0	1.0	4.0	W018151	06-May-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W018151	06-May-10	
EPA 6010B	Potassium	mg/kg	<50.0	4.70	50.0	W018151	06-May-10	
Classical Chemistry Parameters								
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.001	0.300	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.500	0.170	0.500	W019270	07-May-10	
USDA HB60(24)	Total Organic Matter	%	<0.150		0.150	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	<0.0900		0.0900	W019156	06-May-10	
SPLP Extraction Parameters								
ASTM E2242-02	Final Fluid pH	pH Units	6.54			W019086	06-May-10	
SPLP Leachates (Metals)								
EPA 6010B	Copper	mg/L Extract	<0.01	0.006	0.01	W019290	10-May-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010B	Calcium	mg/kg	1930	2000	96.7	80 - 120	W018151	06-May-10	
EPA 6010B	Copper	mg/kg	101	100	101	80 - 120	W018151	06-May-10	
EPA 6010B	Potassium	mg/kg	1930	2000	96.3	80 - 120	W018151	06-May-10	
Classical Chemistry Parameters									
EPA 350.1	Ammonia as N	mg/L	295	341	86.5	33 - 167	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/L	137	122	112	75 - 125	W019270	07-May-10	
EPA 9045C	pH	pH Units	7.54	7.71	97.8	80 - 120	W019186	11-May-10	
USDA HB60(24)	Total Organic Matter	%	51.9	46.4	112	80 - 120	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	30.1	26.9	112	80 - 120	W019156	06-May-10	
SPLP Leachates (Metals)									
EPA 6010B	Copper	mg/L Extract	0.96	1.00	95.8	80 - 120	W019290	10-May-10	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
EPA 350.1	Ammonia as N	mg/kg	1.99	2.10	5.5	20	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	4.07	4.17	2.4	20	W019270	07-May-10	
EPA 9045C	pH	pH Units	4.62	4.87	5.3	20	W019186	11-May-10	
EPA 9045C	pH	pH Units	7.51	7.78	3.5	20	W019186	11-May-10	
USDA HB60(24)	Total Organic Matter	%	1.39	1.40	0.7	20	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	0.810	0.810	0.0	20	W019156	06-May-10	

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	4400	2410	2000	99.6	75 - 125	W018151	06-May-10	
EPA 6010B	Copper	mg/kg	897	773	100	124	75 - 125	W018151	06-May-10	
EPA 6010B	Potassium	mg/kg	5860	3040	2000	141	75 - 125	W018151	06-May-10	M1
Classical Chemistry Parameters										
EPA 350.1	Ammonia as N	mg/kg	3.62	2.10	5.00	30.3	90 - 110	W019136	07-May-10	M2
EPA 350.1	Ammonia as N	mg/kg	6.73	2.19	5.00	90.9	90 - 110	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	13.6	4.17	10.0	94.5	90 - 110	W019270	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	11.9	2.48	10.0	94.5	90 - 110	W019270	07-May-10	
USDA HB60(24)	Total Organic Matter	%	7.06	1.40	5.84	96.9	75 - 125	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	4.10	0.810	3.38	97.3	75 - 125	W019156	06-May-10	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	4.53	3.71	1.00	82.1	75 - 125	W019290	10-May-10	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	5570	4400	2000	23.5	20	W018151	06-May-10	R1
EPA 6010B	Copper	mg/kg	924	897	100	2.9	20	W018151	06-May-10	
EPA 6010B	Potassium	mg/kg	5910	5860	2000	0.9	20	W018151	06-May-10	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	4.65	4.53	1.00	2.6	20	W019290	10-May-10	

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Potassium	mg/kg	4620	3040	2000	79.3	75 - 125	W018151	06-May-10	

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0489**
Reported: 12-May-10 14:48

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
R1	RPD exceeded the method acceptance limit.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7	**Project Name:**	SVL #W0D0489
	HURLEY, NM 88043		
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-001	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	EAST REF 0-6"	**Sampling Time**	1:30 PM			
Matrix	Soil	**Sample Location**	W0D0489-01			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	777	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	9.8	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-002	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	EAST #1 0-6"	**Sampling Time**	2:00 PM		
Matrix	Soil	**Sample Location**	W0D0489-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1170	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	15.4	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-003	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	EAST #1 15"-21"	**Sampling Time**	2:15 PM			
Matrix	Soil	**Sample Location**	W0D0489-03			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	534	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	19.1	Percent				%moisture	

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Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-004	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	EAST #2 0-6"	**Sampling Time**	2:25 PM			
Matrix	Soil	**Sample Location**	W0D0489-04			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1160	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	15.5	Percent				%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287; MT:Cert0095

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-005	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	EAST #2 18"-24"	**Sampling Time**	2:40 PM		
Matrix	Soil	**Sample Location**	W0D0489-05		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	516	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	19	Percent				%moisture	

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Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 100428033
Project Name: SVL #W0D0489

Analytical Results Report

Sample Number	100428033-006	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	EAST #3 0-6"	**Sampling Time**	2:50 PM		
Matrix	Soil	**Sample Location**	W0D0489-06		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1970	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	11.6	Percent				%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287; MT:Cert0095

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-007	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	EAST #3 18"-24"	**Sampling Time**	3:10 PM		
Matrix	Soil	**Sample Location**	W0D0489-07		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	405	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	20.6	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-008	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NORTH #1 18-24"	**Sampling Time**	3:00 PM		
Matrix	Soil	**Sample Location**	W0D0489-08		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	331	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	14.4	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428033-009	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	NORTH #2 18"-24"	**Sampling Time**	3:45 PM			
Matrix	Soil	**Sample Location**	W0D0489-09			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	490	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	21.3	Percent				%moisture	

Authorized Signature

John Coddington, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client:	FREEPORT MCMORAN INC	**Batch #:**	100428033
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0489
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TKN	5.12	mg/kg	5	102.4	70-130	5/12/2010	5/12/2010
TKN	5.45	mg/kg	5	109.0	70-130	5/12/2010	5/12/2010

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100428034-002	TKN	171	1340	mg/Kg	1023	114.3	70-130	5/12/2010	5/12/2010
100428033-001	TKN	777	1810	mg/Kg	1075	96.1	70-130	5/12/2010	5/12/2010

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TKN	1190	mg/Kg	1044	97.6	11.9	0-25	5/12/2010	5/12/2010
TKN	1840	mg/Kg	1045	101.7	1.6	0-25	5/12/2010	5/12/2010

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
TKN	ND	mg/Kg	25	5/12/2010	5/12/2010
TKN	ND	mg/Kg	25	5/12/2010	5/12/2010

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

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Login Report

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 100428033
Order Date: 4/28/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0D0489
Comment:

Sample #: 100428033-001 **Customer Sample #:** EAST REF 0-6"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-002 **Customer Sample #:** EAST #1 0-6"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-003 **Customer Sample #:** EAST #1 15"-21"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-004 **Customer Sample #:** EAST #2 0-6"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Customer Name:	FREEPORT MCMORAN INC	**Order ID:**	100428033
	PO BOX 7	**Order Date:**	4/28/2010
	HURLEY NM 88043		
Contact Name:	CHINO MINES COMPANY	**Project Name:**	SVL #W0D0489
Comment:			

Sample #: 100428033-005 **Customer Sample #:** EAST #2 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/21/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-006 **Customer Sample #:** EAST #3 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/21/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-007 **Customer Sample #:** EAST #3 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/21/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-008 **Customer Sample #:** NORTH #1 18-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428033-009 **Customer Sample #:** NORTH #2 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC

PO BOX 7

HURLEY NM 88043

Order ID: 100428033

Order Date: 4/28/2010

Contact Name: CHINO MINES COMPANY

Project Name: SVL #W0D0489

Comment:

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	4.0
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

15.8°

Chain of Custody Record

COC No. ______

WOD0489

Page 1 of 2

Project Name

Bi-annual amendment pilot sampling for STSIU

Project Location: STSIU

Sampler(s): JJ Dabbs

Project Manager

Pam Pinson

See Attachment From work plan for directions to lab

Analytical Parameters

Chino Mines Company
ELWD.
P.O. Box 7
Hurley, N.M. 88043

Sample	Type		Sample Identification	Matrix	No. of																					
Date	time	Grab	(Field ID)		Containers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Chain of Custody Seal#
4.21.10	1330		East Ref 0-6"	Soil	1																					
4.21.10	1400		East #1 0-6"	Soil	1																					
4.21.10	1415		East #1 15"-21"	Soil	1																					
4.21.10	14:25		East #2 0-6"	Soil	1																					
4.21.10	14:40		East #2 18"-24"	Soil	1																					
4.21.10	1450		East #3 0-6"	Soil	1																					
4.21.10	1510		East #3 18"-24"	Soil	1																					

Special Instructions

Signatures		Date & Time
Relinquished by:	J.J. Dabbs	4/22/10 13.40
Received by:		
Relinquished by:		
Received for Laboratory by:	R. Stuteling	4/23/10 11.40

Shipping Details

Method of Shipment: **UPS RED**

Airbill No.

Lab Addresses: ATTN: Chris Myer

SVL
One Government Gulch
Kellogg, ID 83837-0929

Phone: 208-784-1258
Fax: 208-783-0891

15.8°

Chain of Custody Record

COC No. 1

P.O. Charge to:
0G02UZ

WOD0489

Page 2 of 2

Project Name Bi-annual amendment pilot sampling for STSIU			Analytical Parameters
Project Location: STSIU	Project Manager Pam Pinson	See Attachment From work Plan For direction to lab	Chino Mines Company ELWD. P.O. Box 7 Hurley, N.M. 88043
Sampler(s): JJ Dabbs			

Sample Date	Type time	Type Grab	Sample Identification (Field ID)	Matrix	No. of Containers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Chain of Custody Seal#
4/20/10	10:15	So	West#1 0-6"	Soil	1	X	X																			
4/20/10	10:30		West#1 18"-24"	Soil	1																					
4/20/10	10:50		West#2 0-6"	Soil	1																					
4/20/10	11:00		West #2 18"-24"	Soil	1																					
4/20/10	11:25		West#3 0-6"	Soil	1																					
4/20/10	11:40		West #3 18"-24"	Soil	1																					
4/20/10	12:10		West Ref 0-6"	Soil	1																					
4/20/10	12:15		WestRef. 18"-24"	Soil	1																					
4/20/10	14:50		North#1 0-6"	Soil	1																					
✓ 4/20/10	15:00		North#1 18-24"	Soil	1																					
4/20/10	15:30 15:30		North#2 0-6"	Soil	1																					
✓ 4/20/10	15:45		North #2 18"-24"	Soil	1																					

Special Instructions

Signatures	Date & Time	Shipping Details
Relinquished by: J.S Dabbs ARCADIS	4/22/10 13:10	Method of Shipment: UPS RED
Received by:		Airbill No.
Relinquished by:		Lab Addresses: ATTN: Chris Myer
Received for Laboratory by: R Stiebling	4/23/10 11:40	SVL One Government Gulch Kellogg, ID 83837-0929 Phone: 208-784-1258 Fax: 208-783-0891

OID COC from 2009

LCDC489

Required Analysis

Chain of Custody Record

COC No. 2009-10-07-001

Page 1 of 1

Project Name

STSIU Amendment Study

Project Manager
Pam Pinson

Project Location: Chino, Hurley, NM

Sampler(s): C. Meyer, ARCADIS

Analytical Parameters

Chino Mines Company
ELWD
P O Box 7
Hurley, NM 88043

Sample Date	Sample Time	Sample Type	Sample Identification (Field ID)	Matrix	No of Containers	pH (9045C) 1	Calcium (6010B) 2	Nitrogen (351.1, 353.2, 351.4) 3	Potassium (6010B) 4	Total Organic Carbon (9060) 5	Copper Solubility (total and SPLP) 6	7	8	9	10	11	12	13	14	15	16	17
10/6/09	11:00	So	WEST-03 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	11:46	So	WEST-02 18-20"	Soil	1	X	X	X	X	X	X											
10/7/09	10:15	So	EAST A-02 18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	545	So	EAST B-01 12-18"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-03 8-16"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	2:22	So	NORTH-01 12-20"	Soil	1	X	X	X	X	X	X											
10/6/09	1123	So	WEST-03 18-24"	Soil	1	X	X	X	X	X	X											
10/6/09	4:30	So	EAST B-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	8:30	So	EAST A-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1045	So	EAST A-01 13-19"	Soil	1	X	X	X	X	X	X											
10/6/09	452	So	EAST B-02 9-15"	Soil	1	X	X	X	X	X	X											
10/6/09		So	NORTH-02 21"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 10-15"	Soil	1	X	X	X	X	X	X											
10/6/09	317	So	NORTH-03 11-19"	Soil	1	X	X	X	X	X	X											
10/6/09	210	So	NORTH-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	245	So	NORTH-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	525	So	EAST B-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	310	So	NORTH-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1030	So	EAST A-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	523	So	EAST B-03 10-18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	EAST B-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A White Rain	Soil	1	X																
10/6/09	1000	So	WEST-02 White Rain	Soil	1	X																

Copper solubility: Modified 1312 extraction, 3010A digestion, 6010B analysis

Signatures	Date & Time
Relinquished by	
Received by	
Relinquished by	
Received for Laboratory by:	

Shipping Details

Method of Shipment: Fed Ex

Airbill No.

Lab Addresses: ATTN: Chris Myer

SVL
One Government Gulch
Kellogg ID 83837-0929

Phone: 208-784-1256
Fax: 208-783-0891

Special Instructions

Any questions, please call Pam Pinson at 505 537 4213 or Rebecca Lindeman at 303 231 9115 x123

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Sample Receipt Confirmation

Work Order

W0D0489

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client:	**Freeport McMoRan - Chino Mines**	Project Manager:	**Christine Meyer**
Project:	**Chino - Amendment**	Client PO Number:	**OG02UZ**

Report To:

Freeport McMoRan - Chino Mines
Pam Pinson
PO Box 10
Bayard, NM 88023
Phone: (575) 537-4213
Fax: 505-537-8012

Invoice To:

Freeport McMoRan - Chino Mines
Accounts Payable
PO Box 13308
Phoenix, AZ 85502-3308
Phone: 602-366-8200
Fax: -

Cooler information for **Default Cooler** Temp: 15.8°C Q6: Cooler temp outside 0-6°C **Yes**

Custody Seals **Yes** Containers Intact **Yes** COC/Labels Agree **Yes** Preservation Confirmed **No** Received On Ice **No**

Sample information and analyses assigned		Comments	Removed Analyte
W0D0489-01 Chino - Amendment Study	**EAST REF 0-6" [Soil] 21-Apr-10 13:30 Mountain** TKN Soils		
W0D0489-02 Chino - Amendment Study	**EAST #1 0-6" [Soil] 21-Apr-10 14:00 Mountain** TKN Soils		
W0D0489-03 Chino - Amendment Study	**EAST #1 15"-21" [Soil] 21-Apr-10 14:15 Mountain** TKN Soils		
W0D0489-04 Chino - Amendment Study	**EAST #2 0-6" [Soil] 21-Apr-10 14:25 Mountain** TKN Soils		
W0D0489-05 Chino - Amendment Study	**EAST #2 18"-24" [Soil] 21-Apr-10 14:40 Mountain** TKN Soils		
W0D0489-06 Chino - Amendment Study	**EAST #3 0-6" [Soil] 21-Apr-10 14:50 Mountain** TKN Soils		
W0D0489-07 Chino - Amendment Study	**EAST #3 18"-24" [Soil] 21-Apr-10 15:10 Mountain** TKN Soils		
W0D0489-08 Chino - Amendment Study	**NORTH #1 18-24" [Soil] 20-Apr-10 15:00 Mountain** TKN Soils		
W0D0489-09 Chino - Amendment Study	**NORTH #2 18"-24" [Soil] 20-Apr-10 15:45 Mountain** TKN Soils		

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

Sample Receipt Confirmation

Work Order
W0D0489

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client:	**Freeport McMoRan - Chino Mines**	Project Manager:	**Christine Meyer**
Project:	**Chino - Amendment**	Client PO Number:	**OG02UZ**

Analysis groups included in this work order

Chino - Amendment Study

350.1 NH3	353.2 NO3+NO2	pH Soil 9045C	SPLP 6010B Cu
SPLP Procedure	T 6010B Ca	T 6010B Cu	T 6010B K
TKN Soils	TOM/TOC		

Solid samples will be analyzed on an as-received, wet-weight basis unless otherwise instructed.

Work Order Comments:
Copy of report to: Todd Aebie Arcadis Ohio

a ratio of 1:5 soil/solution
using 0.01 M CaCL2 instead of DI water
not adjusting the inital pH of the soil solutoin to 5.0.

Reviewed By

Date

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Sample Receipt Confirmation

Work Order

W0D0489

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client:	**Freeport McMoRan - Chino Mines**	Project Manager:	**Christine Meyer**
Project:	**Chino - Amendment**	Client PO Number:	**OG02UZ**

	W0D0489-01 EAST REF 0-6" Solid	W0D0489-02 EAST #1 0-6" Solid	W0D0489-03 EAST #1 15"-21" Solid	W0D0489-04 EAST #2 0-6" Solid	W0D0489-05 EAST #2 18"-24" Solid	W0D0489-06 EAST #3 0-6" Solid	W0D0489-07 EAST #3 18"-24" Solid	W0D0489-08 NORTH #1 18-24" Solid
SPLP Procedure	X	X	X	X	X	X	X	X
SPLP-pH	X	X	X	X	X	X	X	X
SPLP-Time	X	X	X	X	X	X	X	X
SPLP-Volume	X	X	X	X	X	X	X	X
SPLP-Weight	X	X	X	X	X	X	X	X
350.1 NH3	X	X	X	X	X	X	X	X
353.2 NO3+NO2	X	X	X	X	X	X	X	X
SPLP 6010B Cu	X	X	X	X	X	X	X	X
T 6010B Ca	X	X	X	X	X	X	X	X
T 6010B Cu	X	X	X	X	X	X	X	X
T 6010B K	X	X	X	X	X	X	X	X
pH Soil 9045C	X	X	X	X	X	X	X	X
TKN Soils	X	X	X	X	X	X	X	X
TOM/TOC	X	X	X	X	X	X	X	X

	W0D0489-09 NORTH #2 18"-24" Solid
SPLP Procedure	X
SPLP-pH	X
SPLP-Time	X
SPLP-Volume	X
SPLP-Weight	X
350.1 NH3	X
353.2 NO3+NO2	X
SPLP 6010B Cu	X
T 6010B Ca	X
T 6010B Cu	X
T 6010B K	X
pH Soil 9045C	X
TKN Soils	X
TOM/TOC	X

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

Printed: 4/27/2010 01:34 PM

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0490**
Bayard, NM 88023	Reported: 13-May-10 11:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
WEST #1 0-6"	W0D0490-01	Soil	20-Apr-10 10:15	JD	23-Apr-2010
WEST #1 18"-24"	W0D0490-02	Soil	20-Apr-10 10:30	JD	23-Apr-2010
WEST #2 0-6"	W0D0490-03	Soil	20-Apr-10 10:50	JD	23-Apr-2010
WEST #2 18"-24"	W0D0490-04	Soil	20-Apr-10 11:00	JD	23-Apr-2010
WEST #3 0-6"	W0D0490-05	Soil	20-Apr-10 11:25	JD	23-Apr-2010
WEST #3 18"-24"	W0D0490-06	Soil	20-Apr-10 11:40	JD	23-Apr-2010
WEST REF 0-6"	W0D0490-07	Soil	20-Apr-10 12:10	JD	23-Apr-2010
WEST REF 18"-24"	W0D0490-08	Soil	20-Apr-10 12:15	JD	23-Apr-2010
NORTH #1 0-6"	W0D0490-09	Soil	20-Apr-10 14:50	JD	23-Apr-2010
NORTH #2 0-6"	W0D0490-10	Soil	20-Apr-10 15:30	JD	23-Apr-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).
The guidelines do not pertain to nitric-preserved metals.

Default Cooler (Received Temperature: 15.6°C)

Labnumber	Container	Client ID	Labnumber	Container	Client ID
W0D0490-01 A	Bag, Ziploc	WEST #1 0-6"	W0D0490-01 B	Misc.	WEST #1 0-6"
W0D0490-01 C	Manilla 10-Sieve	WEST #1 0-6"	W0D0490-02 A	Bag, Ziploc	WEST #1 18"-24"
W0D0490-02 B	Misc.	WEST #1 18"-24"	W0D0490-02 C	Manilla 10-Sieve	WEST #1 18"-24"
W0D0490-03 A	Bag, Ziploc	WEST #2 0-6"	W0D0490-03 B	Misc.	WEST #2 0-6"
W0D0490-03 C	Manilla 10-Sieve	WEST #2 0-6"	W0D0490-04 A	Bag, Ziploc	WEST #2 18"-24"
W0D0490-04 B	Misc.	WEST #2 18"-24"	W0D0490-04 C	Manilla 10-Sieve	WEST #2 18"-24"
W0D0490-05 A	Bag, Ziploc	WEST #3 0-6"	W0D0490-05 B	Misc.	WEST #3 0-6"
W0D0490-05 C	Manilla 10-Sieve	WEST #3 0-6"	W0D0490-06 A	Bag, Ziploc	WEST #3 18"-24"
W0D0490-06 B	Misc.	WEST #3 18"-24"	W0D0490-06 C	Manilla 10-Sieve	WEST #3 18"-24"
W0D0490-07 A	Bag, Ziploc	WEST REF 0-6"	W0D0490-07 B	Misc.	WEST REF 0-6"
W0D0490-07 C	Manilla 10-Sieve	WEST REF 0-6"	W0D0490-08 A	Bag, Ziploc	WEST REF 18"-24"
W0D0490-08 B	Misc.	WEST REF 18"-24"	W0D0490-08 C	Manilla 10-Sieve	WEST REF 18"-24"
W0D0490-09 A	Bag, Ziploc	NORTH #1 0-6"	W0D0490-09 B	Misc.	NORTH #1 0-6"
W0D0490-09 C	Manilla 10-Sieve	NORTH #1 0-6"	W0D0490-10 A	Bag, Ziploc	NORTH #2 0-6"
W0D0490-10 B	Misc.	NORTH #2 0-6"	W0D0490-10 C	Manilla 10-Sieve	NORTH #2 0-6"

Case Narrative

05/13/10mab: TKN is subcontracted

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **WEST #1 0-6"**
SVL Sample ID: **W0D0490-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 10:15
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	6030	mg/kg	4.0	1.0		W020106	AS	05/11/10 17:46	
EPA 6010B	**Copper**	473	mg/kg	1.00	0.21		W020106	AS	05/11/10 17:47	
EPA 6010B	**Potassium**	3290	mg/kg	50.0	4.70		W020106	AS	05/11/10 17:46	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	1.63	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:50	
EPA 353.2	**Nitrate/Nitrite as N**	3.66	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:46	
EPA 9045C	**pH**	7.39	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	1.20	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	2.07	%	0.150			W019156	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.54	pH Units				W019086	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:08	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **WEST #1 18"-24"**
SVL Sample ID: **W0D0490-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 10:30
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	94200	mg/kg	40.0	9.6	10	W020106	AS	05/11/10 19:17	D2
EPA 6010B	**Copper**	219	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:04	
EPA 6010B	**Potassium**	2010	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:03	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.19	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:51	
EPA 353.2	**Nitrate/Nitrite as N**	2.48	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:47	
EPA 9045C	**pH**	7.78	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.590	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.01	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.71	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:14	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **WEST #2 0-6"**
SVL Sample ID: **W0D0490-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 10:50
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6790	mg/kg	4.0	1.0		W020106	AS	05/11/10 18:09	
EPA 6010B	**Copper**	546	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:10	
EPA 6010B	**Potassium**	2300	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:09	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.93	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:54	
EPA 353.2	**Nitrate/Nitrite as N**	2.43	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:49	
EPA 9045C	**pH**	7.84	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.910	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.57	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.86	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:20	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **WEST #2 18"-24"**
SVL Sample ID: **W0D0490-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 11:00
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	102000	mg/kg	40.0	9.6	10	W020106	AS	05/11/10 19:23	D2
EPA 6010B	**Copper**	229	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:16	
EPA 6010B	**Potassium**	2060	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:15	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	3.28	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:55	
EPA 353.2	**Nitrate/Nitrite as N**	2.09	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:50	
EPA 9045C	**pH**	8.05	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.580	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.00	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.95	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0490**
Bayard, NM 88023	Reported: 13-May-10 11:03

Client Sample ID: **WEST #3 0-6"**
SVL Sample ID: **W0D0490-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 11:25
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6270	mg/kg	4.0	1.0		W020106	AS	05/11/10 18:21	
EPA 6010B	**Copper**	308	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:22	
EPA 6010B	**Potassium**	3000	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:21	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.90	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:57	
EPA 353.2	**Nitrate/Nitrite as N**	3.26	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:51	
EPA 9045C	**pH**	7.96	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	1.27	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	2.19	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.90	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:31	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **WEST #3 18"-24"**
SVL Sample ID: **W0D0490-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 11:40
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	139000	mg/kg	40.0	9.6	10	W020106	AS	05/11/10 19:29	D2
EPA 6010B	**Copper**	240	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:28	
EPA 6010B	**Potassium**	1530	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:27	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	4.65	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:58	
EPA 353.2	**Nitrate/Nitrite as N**	1.78	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:52	
EPA 9045C	**pH**	8.02	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.640	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.10	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	8.08	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:47	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0490**
Bayard, NM 88023	Reported: 13-May-10 11:03

Client Sample ID: **WEST REF 0-6"**
SVL Sample ID: **W0D0490-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 12:10
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	7930	mg/kg	4.0	1.0		W020106	AS	05/11/10 18:47	
EPA 6010B	**Copper**	233	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:48	
EPA 6010B	**Potassium**	3060	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:47	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	2.55	mg/kg	0.300	0.001		W019136	TJK	05/07/10 13:59	
EPA 353.2	**Nitrate/Nitrite as N**	3.04	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:57	
EPA 9045C	**pH**	7.99	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	1.21	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	2.08	%	0.150			W019156	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	8.04	pH Units				W019086	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:53	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **WEST REF 18"-24"**
SVL Sample ID: **W0D0490-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 12:15
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	142000	mg/kg	40.0	9.6	10	W020106	AS	05/11/10 19:35	D2
EPA 6010B	**Copper**	216	mg/kg	1.00	0.21		W020106	AS	05/11/10 18:55	
EPA 6010B	**Potassium**	1890	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:53	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	5.57	mg/kg	0.300	0.001		W019136	TJK	05/07/10 14:01	
EPA 353.2	**Nitrate/Nitrite as N**	1.83	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:58	
EPA 9045C	**pH**	7.52	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.700	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.20	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	8.21	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 16:59	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **NORTH #1 0-6"**
SVL Sample ID: **W0D0490-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 14:50
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	8410	mg/kg	4.0	1.0		W020106	AS	05/11/10 18:59	
EPA 6010B	**Copper**	736	mg/kg	1.00	0.21		W020106	AS	05/11/10 19:01	
EPA 6010B	**Potassium**	2440	mg/kg	50.0	4.70		W020106	AS	05/11/10 18:59	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	2.01	mg/kg	0.300	0.001		W019136	TJK	05/07/10 14:02	
EPA 353.2	**Nitrate/Nitrite as N**	7.69	mg/kg	0.500	0.170		W019270	TJK	05/07/10 15:59	
EPA 9045C	**pH**	6.53	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.890	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.54	%	0.150			W019156	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.53	pH Units				W019086	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 17:05	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Client Sample ID: **NORTH #2 0-6"**
SVL Sample ID: **W0D0490-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 15:30
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7680	mg/kg	4.0	1.0		W020106	AS	05/11/10 19:05	
EPA 6010B	**Copper**	340	mg/kg	1.00	0.21		W020106	AS	05/11/10 19:07	
EPA 6010B	**Potassium**	2070	mg/kg	50.0	4.70		W020106	AS	05/11/10 19:05	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	3.34	mg/kg	0.300	0.001		W019136	TJK	05/07/10 14:09	
EPA 353.2	**Nitrate/Nitrite as N**	6.48	mg/kg	0.500	0.170		W019270	TJK	05/07/10 16:00	
EPA 9045C	**pH**	6.95	pH Units				W019186	DKS	05/11/10 14:11	
USDA HB60(24)	**Total Organic Carbon**	0.800	%	0.0900			W019156	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.38	%	0.150			W019156	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.29	pH Units				W019086	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.04	mg/L Extract	0.01	0.006		W019290	AS	05/10/10 17:10	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	<4.0	1.0	4.0	W020106	11-May-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W020106	11-May-10	
EPA 6010B	Potassium	mg/kg	<50.0	4.70	50.0	W020106	11-May-10	

Classical Chemistry Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.001	0.300	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.500	0.170	0.500	W019270	07-May-10	
USDA HB60(24)	Total Organic Matter	%	<0.150		0.150	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	<0.0900		0.0900	W019156	06-May-10	

SPLP Extraction Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
ASTM E2242-02	Final Fluid pH	pH Units	6.54			W019086	06-May-10	

SPLP Leachates (Metals)

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	<0.01	0.006	0.01	W019290	10-May-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	1920	2000	96.2	80 - 120	W020106	11-May-10	
EPA 6010B	Copper	mg/kg	100	100	100	80 - 120	W020106	11-May-10	
EPA 6010B	Potassium	mg/kg	1860	2000	93.0	80 - 120	W020106	11-May-10	

Classical Chemistry Parameters

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/L	295	341	86.5	33 - 167	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/L	137	122	112	75 - 125	W019270	07-May-10	
EPA 9045C	pH	pH Units	7.54	7.71	97.8	80 - 120	W019186	11-May-10	
USDA HB60(24)	Total Organic Matter	%	51.9	46.4	112	80 - 120	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	30.1	26.9	112	80 - 120	W019156	06-May-10	

SPLP Leachates (Metals)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	0.96	1.00	95.8	80 - 120	W019290	10-May-10	

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	1.99	2.10	5.5	20	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	4.07	4.17	2.4	20	W019270	07-May-10	
EPA 9045C	pH	pH Units	4.62	4.87	5.3	20	W019186	11-May-10	
EPA 9045C	pH	pH Units	7.51	7.78	3.5	20	W019186	11-May-10	
USDA HB60(24)	Total Organic Matter	%	1.39	1.40	0.7	20	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	0.810	0.810	0.0	20	W019156	06-May-10	

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0490**
Reported: 13-May-10 11:03

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	8360	6030	2000	117	75 - 125	W020106	11-May-10	
EPA 6010B	Copper	mg/kg	634	473	100	R > 4S	75 - 125	W020106	11-May-10	M3
EPA 6010B	Potassium	mg/kg	6240	3290	2000	148	75 - 125	W020106	11-May-10	M1

Classical Chemistry Parameters

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	3.62	2.10	5.00	30.3	90 - 110	W019136	07-May-10	M2
EPA 350.1	Ammonia as N	mg/kg	6.73	2.19	5.00	90.9	90 - 110	W019136	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	13.6	4.17	10.0	94.5	90 - 110	W019270	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	11.9	2.48	10.0	94.5	90 - 110	W019270	07-May-10	
USDA HB60(24)	Total Organic Matter	%	7.06	1.40	5.84	96.9	75 - 125	W019156	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	4.10	0.810	3.38	97.3	75 - 125	W019156	06-May-10	

SPLP Leachates (Metals)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	4.53	3.71	1.00	82.1	75 - 125	W019290	10-May-10	

Quality Control - MATRIX SPIKE DUPLICATE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	8500	8360	2000	1.6	20	W020106	11-May-10	
EPA 6010B	Copper	mg/kg	595	634	100	6.3	20	W020106	11-May-10	
EPA 6010B	Potassium	mg/kg	6100	6240	2000	2.3	20	W020106	11-May-10	

SPLP Leachates (Metals)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	4.65	4.53	1.00	2.6	20	W019290	10-May-10	

Quality Control - POST DIGESTION SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Potassium	mg/kg	4790	3290	2000	74.9	75 - 125	W020106	11-May-10	M2

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428034
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0490
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428034-001	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	WEST #1 0-6"	**Sampling Time**	10:15 AM		
Matrix	Soil	**Sample Location**	W0D0490-01		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1320	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	11.3	Percent				%moisture	

Sample Number	100428034-002	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	WEST #1 18"-24"	**Sampling Time**	10:30 AM		
Matrix	Soil	**Sample Location**	W0D0490-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	171	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	6.7	Percent				%moisture	

Sample Number	100428034-003	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	WEST #2 0-6"	**Sampling Time**	10:50 AM		
Matrix	Soil	**Sample Location**	W0D0490-03		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	871	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	6.8	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428034
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0490
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428034-004	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	WEST #2 18"-24"	**Sampling Time**	11:00 AM			
Matrix	Soil	**Sample Location**	W0D0490-04			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	358	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	8.9	Percent				%moisture	

Sample Number	100428034-005	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	WEST #3 0-6"	**Sampling Time**	11:25 AM			
Matrix	Soil	**Sample Location**	W0D0490-05			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1080	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	10.3	Percent				%moisture	

Sample Number	100428034-006	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	WEST #3 18"-24"	**Sampling Time**	11:40 AM			
Matrix	Soil	**Sample Location**	W0D0490-06			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	454	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	8.2	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428034
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0490
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428034-007	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	WEST REF 0-6"	**Sampling Time**	12:10 PM			
Matrix	Soil	**Sample Location**	W0D0490-07			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1250	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	10.5	Percent				%moisture	

Sample Number	100428034-008	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	WEST REF 18"-24"	**Sampling Time**	12:15 PM			
Matrix	Soil	**Sample Location**	W0D0490-08			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	609	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	10.2	Percent				%moisture	

Sample Number	100428034-009	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	NORTH #1 0-6"	**Sampling Time**	2:50 PM			
Matrix	Soil	**Sample Location**	W0D0490-09			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	725	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	10	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428034
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0490
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428034-010	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NORTH #2 0-6"	**Sampling Time**	3:30 PM		
Matrix	Soil	**Sample Location**	W0D0490-10		
Comments					

Parameter	**Result**	**Units**	**PQL**	**Analysis Date**	**Analyst**	**Method**	**Qualifier**
TKN	841	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	10	Percent				%moisture	

Authorized Signature

John Coddington, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client:	FREEPORT MCMORAN INC	**Batch #:**	100428034
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0490
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TKN	5.37	mg/kg	5	107.4	70-130	5/12/2010	5/12/2010
TKN	5.12	mg/kg	5	102.4	70-130	5/12/2010	5/12/2010

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100428034-004	TKN	358	1450	mg/Kg	1015	107.6	70-130	5/12/2010	5/12/2010
100428034-002	TKN	171	1340	mg/Kg	1023	114.3	70-130	5/12/2010	5/12/2010

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TKN	1460	mg/Kg	1050	105.0	0.7	0-25	5/12/2010	5/12/2010
TKN	1190	mg/Kg	1044	97.6	11.9	0-25	5/12/2010	5/12/2010

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
TKN	ND	mg/Kg	25	5/12/2010	5/12/2010
TKN	ND	mg/Kg	25	5/12/2010	5/12/2010

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

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Login Report

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 100428034
Order Date: 4/28/2010

Contact Name: CHINO MINES COMPANY

Project Name: SVL #W0D0490

Comment:

Sample #: 100428034-001 **Customer Sample #:** WEST #1 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-002 **Customer Sample #:** WEST #1 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-003 **Customer Sample #:** WEST #2 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-004 **Customer Sample #:** WEST #2 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Customer Name:	FREEPORT MCMORAN INC	**Order ID:**	100428034
	PO BOX 7	**Order Date:**	4/28/2010
	HURLEY NM 88043		
Contact Name:	CHINO MINES COMPANY	**Project Name:**	SVL #W0D0490
Comment:			

Sample #: 100428034-005 **Customer Sample #:** WEST #3 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-006 **Customer Sample #:** WEST #3 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-007 **Customer Sample #:** WEST REF 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-008 **Customer Sample #:** WEST REF 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428034-009 **Customer Sample #:** NORTH #1 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 100428034
Order Date: 4/28/2010

Contact Name: CHINO MINES COMPANY

Project Name: SVL #W0D0490

Comment:

Sample #: 100428034-010 **Customer Sample #:** NORTH #2 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	4.0
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

15.6

Chain of Custody Record

COC No. 2

P.O. Charge to: WOD0490

Page 1 of 1

Project Name Bi-annual amendment pilot sampling for STSIU	Project Manager Pam Pinson	0G02UZ see Attachment From work Plan for direction to Lab	**Analytical Parameters** Chino Mines Company ELWD. P.O. Box 7 Hurley, N.M. 88043
Project Location: STSIU			
Sampler(s): JJ Dabbs			

Sample Date	time	Type Grab	Sample Identification (Field ID)	Matrix	No. of Containers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Chain of Custody Seal#
4/20/10	10:15	x	West#1 0-6"	Soil	1	X	X																			
4/20/10	10:30		West#1 18"-24"	Soil	1																					
4/20/10	10:50		West#2 0-6"	Soil	1																					
4/20/10	11:00		West#2 18"-24"	Soil	1																					
4/20/10	11:25		West#3 0-6"	Soil	1																					
4/20/10	11:40		West #3 18"-24"	Soil	1																					
4/20/10	12:10		West Ref 0-6"	Soil	1																					
4/20/10	12:15		West Ref 18"-24"	Soil	1																					
4/20/10	14:50		North#1 0-6"	Soil	1																					
~~4/20/10~~	~~15:00~~		~~North#1 18"-24"~~	~~Soil~~	~~1~~																					
4/20/10	15:39 15:30		North#2 0-6"	Soil	1																					
~~4/20/10~~	~~15:45~~		~~North#2 18"-24"~~	~~Soil~~	~~1~~																					

Special Instructions

Signatures	Date & Time
Relinquished by: J.J. Dabbs ARCADIS	4/22/10 1342
Received by:	
Relinquished by:	
Received for Laboratory by: R.Stubbleling	4/23/10 1140

Shipping Details

Method of Shipment: UPS RED

Airbill No.

Lab Addresses: ATTN: Chris Myer

SVL
One Government Gulch
Kellogg, ID 83837-0929

Phone: 208-784-1258
Fax: 208-783-0891

OLD COC from 2009

Required Analysis

Chain of Custody Record

WC150490

COC No. 2009-10-07-001

Page 1 of 1

Project Name: STSIU Amendment Study

Project Manager: Pam Pinson

Project Location: Chino, Hurley, NM

Sampler(s): C. Meyer, ARCADIS

Analytical Parameters

Chino Mines Company
ELWD
P.O. Box 7
Hurley, NM 88043

Sample Date	Sample Time	Sample Type	Sample Identification (Field ID)	Matrix	No of Containers	pH (9045C) 1	Calcium (6010B) 2	Nitrogen (350.1, 353.2, 351.4) 3	Potassium (6010B) 4	Total Organic Carbon (9060) 5	Copper Solubility (total and SPLP) 6	7	8	9	10	11	12	13	14	15	16	17
10/6/09	11:00	So	WEST-03 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	11:46	So	WEST-02 18-20"	Soil	1	X	X	X	X	X	X											
10/7/09	10:15	So	EAST A-02 18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	545	So	EAST B-01 12-18"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-03 8-16"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	2:22	So	NORTH-01 12-20"	Soil	1	X	X	X	X	X	X											
10/6/09	1123	So	WEST-03 18-24"	Soil	1	X	X	X	X	X	X											
10/6/09	4:30	So	EAST B-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	8:30	So	EAST A-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1045	So	EAST A-01 13-19"	Soil	1	X	X	X	X	X	X											
10/6/09	452	So	EAST B-02 9-15"	Soil	1	X	X	X	X	X	X											
10/6/09		So	NORTH-02 21"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 10-15"	Soil	1	X	X	X	X	X	X											
10/6/09	317	So	NORTH-03 11-19"	Soil	1	X	X	X	X	X	X											
10/6/09	210	So	NORTH-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	245	So	NORTH-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	525	So	EAST B-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	310	So	NORTH-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1030	So	EAST A-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	523	So	EAST B-03 10-18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	EAST B-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A WhiteRain	Soil	1	X																
10/6/09	1000	So	WEST-02 WhiteRain	Soil	1	X																

Copper solubility: Modified 1312 extraction, 3010A digestion, 6010B analysis

Signatures	Date & Time
Relinquished by	
Received by:	
Relinquished by	
Received for Laboratory by:	

Shipping Details

Method of Shipment: Fed Ex

Airbill No.

Lab Addresses: ATTN: Chris Myer

SVL
One Government Gulch
Kellogg, ID 83837-0929

Phone: 208-784-1258
Fax: 208-783-0891

Special Instructions

Any questions, please call Pam Pinson at 505 537 4213 or Rebecca Lindeman at 303 231 9115 x123

SVL ANALYTICAL

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Sample Receipt Confirmation

Work Order

W0D0490

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client: **Freeport McMoRan - Chino Mines**
Project: **Chino - Amendment**
Project Manager: **Christine Meyer**
Client PO Number: **OG02UZ**

Report To:
Freeport McMoRan - Chino Mines
Pam Pinson
PO Box 10
Bayard, NM 88023
Phone: (575) 537-4213
Fax: 505-537-8012

Invoice To:
Freeport McMoRan - Chino Mines
Accounts Payable
PO Box 13308
Phoenix, AZ 85502-3308
Phone: 602-366-8200
Fax: -

Cooler information for **Default Cooler** Temp: 15.6°C Q6: Cooler temp outside 0-6°C **Yes**
Custody Seals **Yes** Containers Intact **Yes** COC/Labels Agree **Yes** Preservation Confirmed **No** Received On Ice **No**

Sample information and analyses assigned		Comments	Removed Analyte
W0D0490-01 Chino - Amendment Study	**WEST #1 0-6" [Soil] 20-Apr-10 10:15 Mountain** TKN Soils		
W0D0490-02 Chino - Amendment Study	**WEST #1 18"-24" [Soil] 20-Apr-10 10:30 Mountain** TKN Soils		
W0D0490-03 Chino - Amendment Study	**WEST #2 0-6" [Soil] 20-Apr-10 10:50 Mountain** TKN Soils		
W0D0490-04 Chino - Amendment Study	**WEST #2 18"-24" [Soil] 20-Apr-10 11:00 Mountain** TKN Soils		
W0D0490-05 Chino - Amendment Study	**WEST #3 0-6" [Soil] 20-Apr-10 11:25 Mountain** TKN Soils		
W0D0490-06 Chino - Amendment Study	**WEST #3 18"-24" [Soil] 20-Apr-10 11:40 Mountain** TKN Soils		
W0D0490-07 Chino - Amendment Study	**WEST REF 0-6" [Soil] 20-Apr-10 12:10 Mountain** TKN Soils		
W0D0490-08 Chino - Amendment Study	**WEST REF 18"-24" [Soil] 20-Apr-10 12:15 Mountain** TKN Soils		
W0D0490-09 Chino - Amendment Study	**NORTH #1 0-6" [Soil] 20-Apr-10 14:50 Mountain** TKN Soils		
W0D0490-10 Chino - Amendment Study	**NORTH #2 0-6" [Soil] 20-Apr-10 15:30 Mountain** TKN Soils		

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

Sample Receipt Confirmation

Work Order

W0D0490

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client: **Freeport McMoRan - Chino Mines**
Project: **Chino - Amendment**
Project Manager: **Christine Meyer**
Client PO Number: **OG02UZ**

Analysis groups included in this work order

Chino - Amendment Study

350.1 NH3	353.2 NO3+NO2	pH Soil 9045C	SPLP 6010B Cu
SPLP Procedure	T 6010B Ca	T 6010B Cu	T 6010B K
TKN Soils	TOM/TOC		

Solid samples will be analyzed on an as-received, wet-weight basis unless otherwise instructed.

Work Order Comments:
Copy of report to: Todd Aebie Arcadis Ohio

a ratio of 1:5 soil/solution
using 0.01 M CaCL2 instead of DI water
not adjusting the inital pH of the soil solutoin to 5.0.

Reviewed By

Date

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

Printed: 4/27/2010 01:35 PM

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Sample Receipt Confirmation

Work Order

W0D0490

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client: **Freeport McMoRan - Chino Mines**
Project: **Chino - Amendment**
Project Manager: **Christine Meyer**
Client PO Number: **OG02UZ**

	W0D0490-01 WEST #1 0-6" Solid	W0D0490-02 WEST #1 18"-24" Solid	W0D0490-03 WEST #2 0-6" Solid	W0D0490-04 WEST #2 18"-24" Solid	W0D0490-05 WEST #3 0-6" Solid	W0D0490-06 WEST #3 18"-24" Solid	W0D0490-07 WEST REF 0-6" Solid	W0D0490-08 WEST REF 18"-24" Solid
SPLP Procedure	X	X	X	X	X	X	X	X
SPLP-pH	X	X	X	X	X	X	X	X
SPLP-Time	X	X	X	X	X	X	X	X
SPLP-Volume	X	X	X	X	X	X	X	X
SPLP-Weight	X	X	X	X	X	X	X	X
350.1 NH3	X	X	X	X	X	X	X	X
353.2 NO3+NO2	X	X	X	X	X	X	X	X
SPLP 6010B Cu	X	X	X	X	X	X	X	X
T 6010B Ca	X	X	X	X	X	X	X	X
T 6010B Cu	X	X	X	X	X	X	X	X
T 6010B K	X	X	X	X	X	X	X	X
pH Soil 9045C	X	X	X	X	X	X	X	X
TKN Soils	X	X	X	X	X	X	X	X
TOM/TOC	X	X	X	X	X	X	X	X

	W0D0490-09 NORTH #1 0-6" Solid	W0D0490-10 NORTH #2 0-6" Solid
SPLP Procedure	X	X
SPLP-pH	X	X
SPLP-Time	X	X
SPLP-Volume	X	X
SPLP-Weight	X	X
350.1 NH3	X	X
353.2 NO3+NO2	X	X
SPLP 6010B Cu	X	X
T 6010B Ca	X	X
T 6010B Cu	X	X
T 6010B K	X	X
pH Soil 9045C	X	X
TKN Soils	X	X
TOM/TOC	X	X

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
NORTH #3 0"-6"	W0D0491-01	Soil	20-Apr-10 16:00	JD	23-Apr-2010
NORTH #3 18"-24"	W0D0491-02	Soil	20-Apr-10 16:15	JD	23-Apr-2010
NORTH REF 0-6"	W0D0491-03	Soil	20-Apr-10 16:30	JD	23-Apr-2010
NORTH REF 18"-24"	W0D0491-04	Soil	20-Apr-10 16:45	JD	23-Apr-2010
NE REF 0-6"	W0D0491-05	Soil	21-Apr-10 08:05	JD	23-Apr-2010
NE REF 18"-24"	W0D0491-06	Soil	21-Apr-10 08:10	JD	23-Apr-2010
NE #1 0-6"	W0D0491-07	Soil	21-Apr-10 09:45	JD	23-Apr-2010
NE #1 18"-24"	W0D0491-08	Soil	21-Apr-10 10:00	JD	23-Apr-2010
NE #2 0-6"	W0D0491-09	Soil	21-Apr-10 08:30	JD	23-Apr-2010
NE #2 18"-24"	W0D0491-10	Soil	21-Apr-10 08:30	JD	23-Apr-2010
NE #3 0-6"	W0D0491-11	Soil	21-Apr-10 09:00	JD	23-Apr-2010
NE #3 18"-24"	W0D0491-12	Soil	21-Apr-10 09:20	JD	23-Apr-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).
The guidelines do not pertain to nitric-preserved metals.

Default Cooler (Received Temperature: 15.6°C)

Labnumber	Container	Client ID	Labnumber	Container	Client ID
W0D0491-01 A	Bag, Ziploc	NORTH #3 0"-6"	W0D0491-01 B	Misc.	NORTH #3 0"-6"
W0D0491-01 C	Manilla 10-Sieve	NORTH #3 0"-6"	W0D0491-02 A	Bag, Ziploc	NORTH #3 18"-24"
W0D0491-02 B	Misc.	NORTH #3 18"-24"	W0D0491-02 C	Manilla 10-Sieve	NORTH #3 18"-24"
W0D0491-03 A	Bag, Ziploc	NORTH REF 0-6"	W0D0491-03 B	Misc.	NORTH REF 0-6"
W0D0491-03 C	Manilla 10-Sieve	NORTH REF 0-6"	W0D0491-04 A	Bag, Ziploc	NORTH REF 18"-24"
W0D0491-04 B	Misc.	NORTH REF 18"-24"	W0D0491-04 C	Manilla 10-Sieve	NORTH REF 18"-24"
W0D0491-05 A	Bag, Ziploc	NE REF 0-6"	W0D0491-05 B	Misc.	NE REF 0-6"
W0D0491-05 C	Manilla 10-Sieve	NE REF 0-6"	W0D0491-06 A	Bag, Ziploc	NE REF 18"-24"
W0D0491-06 B	Misc.	NE REF 18"-24"	W0D0491-06 C	Manilla 10-Sieve	NE REF 18"-24"
W0D0491-07 A	Bag, Ziploc	NE #1 0-6"	W0D0491-07 B	Misc.	NE #1 0-6"
W0D0491-07 C	Manilla 10-Sieve	NE #1 0-6"	W0D0491-08 A	Bag, Ziploc	NE #1 18"-24"
W0D0491-08 B	Misc.	NE #1 18"-24"	W0D0491-08 C	Manilla 10-Sieve	NE #1 18"-24"
W0D0491-09 A	Bag, Ziploc	NE #2 0-6"	W0D0491-09 B	Misc.	NE #2 0-6"
W0D0491-09 C	Manilla 10-Sieve	NE #2 0-6"	W0D0491-10 A	Bag, Ziploc	NE #2 18"-24"
W0D0491-10 B	Misc.	NE #2 18"-24"	W0D0491-10 C	Manilla 10-Sieve	NE #2 18"-24"
W0D0491-11 A	Bag, Ziploc	NE #3 0-6"	W0D0491-11 B	Misc.	NE #3 0-6"
W0D0491-11 C	Manilla 10-Sieve	NE #3 0-6"	W0D0491-12 A	Bag, Ziploc	NE #3 18"-24"
W0D0491-12 B	Misc.	NE #3 18"-24"	W0D0491-12 C	Manilla 10-Sieve	NE #3 18"-24"

Case Narrative

05/12/10mab: TKN is subcontracted

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NORTH #3 0"-6"**
SVL Sample ID: **W0D0491-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 16:00
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7560	mg/kg	4.0	1.0		W018214	AS	05/06/10 12:12	
EPA 6010B	**Copper**	1270	mg/kg	1.00	0.21		W018214	AS	05/06/10 12:14	
EPA 6010B	**Potassium**	2670	mg/kg	50.0	4.70		W018214	AS	05/06/10 12:12	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	5.94	mg/kg	0.300	0.001		W019135	TJK	05/07/10 12:57	
EPA 353.2	**Nitrate/Nitrite as N**	65.1	mg/kg	1.00	0.340	2	W019269	TJK	05/07/10 15:22	D2
EPA 9045C	**pH**	6.06	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	1.99	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	3.43	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.51	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.45	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 11:26	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NORTH #3 18"-24"**
SVL Sample ID: **W0D0491-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 16:15
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	12400	mg/kg	4.0	1.0		W018214	AS	05/06/10 12:30	
EPA 6010B	**Copper**	114	mg/kg	1.00	0.21		W018214	AS	05/06/10 12:31	
EPA 6010B	**Potassium**	2210	mg/kg	50.0	4.70		W018214	AS	05/06/10 12:30	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.26	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:01	
EPA 353.2	**Nitrate/Nitrite as N**	8.44	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:06	
EPA 9045C	**pH**	7.83	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	0.650	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.12	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.81	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 11:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NORTH REF 0-6"**
SVL Sample ID: **W0D0491-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 16:30
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4130	mg/kg	4.0	1.0		W018214	AS	05/06/10 12:42	
EPA 6010B	**Copper**	689	mg/kg	1.00	0.21		W018214	AS	05/06/10 12:43	
EPA 6010B	**Potassium**	2840	mg/kg	50.0	4.70		W018214	AS	05/06/10 12:42	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.29	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:02	
EPA 353.2	**Nitrate/Nitrite as N**	3.14	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:07	
EPA 9045C	**pH**	5.76	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	0.820	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.42	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.28	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.55	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 11:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NORTH REF 18"-24"**
SVL Sample ID: **W0D0491-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Apr-10 16:45
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	17800	mg/kg	4.0	1.0		W018214	AS	05/06/10 12:48	
EPA 6010B	**Copper**	94.6	mg/kg	1.00	0.21		W018214	AS	05/06/10 12:49	
EPA 6010B	**Potassium**	3320	mg/kg	50.0	4.70		W018214	AS	05/06/10 12:48	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.50	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:03	
EPA 353.2	**Nitrate/Nitrite as N**	3.43	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:08	
EPA 9045C	**pH**	8.21	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	0.360	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	0.610	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.23	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 11:56	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NE REF 0-6"**
SVL Sample ID: **W0D0491-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 08:05
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6380	mg/kg	4.0	1.0		W018214	AS	05/06/10 12:53	
EPA 6010B	**Copper**	648	mg/kg	1.00	0.21		W018214	AS	05/06/10 12:55	
EPA 6010B	**Potassium**	3730	mg/kg	50.0	4.70		W018214	AS	05/06/10 12:53	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.99	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:05	
EPA 353.2	**Nitrate/Nitrite as N**	4.10	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:09	
EPA 9045C	**pH**	6.16	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	1.03	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.78	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.95	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.08	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:02	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0491**
Bayard, NM 88023	Reported: 12-May-10 14:41

Client Sample ID: **NE REF 18"-24"**
SVL Sample ID: **W0D0491-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 08:10
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	9960	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:11	
EPA 6010B	**Copper**	40.4	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:12	
EPA 6010B	**Potassium**	3250	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:11	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.31	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:06	
EPA 353.2	**Nitrate/Nitrite as N**	2.89	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:10	
EPA 9045C	**pH**	7.53	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	0.430	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	0.750	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.34	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:09	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NE #1 0-6"**
SVL Sample ID: **W0D0491-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 09:45
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4960	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:17	
EPA 6010B	**Copper**	673	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:18	
EPA 6010B	**Potassium**	4880	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:17	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.93	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:13	
EPA 353.2	**Nitrate/Nitrite as N**	8.34	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:15	
EPA 9045C	**pH**	6.31	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	1.17	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	2.02	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.95	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.17	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:26	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NE #1 18"-24"**
SVL Sample ID: **W0D0491-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 10:00
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	4570	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:23	
EPA 6010B	**Copper**	224	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:24	
EPA 6010B	**Potassium**	4140	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:23	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	2.50	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:14	
EPA 353.2	**Nitrate/Nitrite as N**	4.45	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:16	
EPA 9045C	**pH**	6.51	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	0.650	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.12	%	0.150			W019015	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	6.44	pH Units				W019087	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:32	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NE #2 0-6"**
SVL Sample ID: **W0D0491-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 08:30
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6160	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:28	
EPA 6010B	**Copper**	724	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:30	
EPA 6010B	**Potassium**	4640	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:28	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.71	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:15	
EPA 353.2	**Nitrate/Nitrite as N**	6.22	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:17	
EPA 9045C	**pH**	6.34	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	1.28	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	2.20	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.48	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.12	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:39	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NE #2 18"-24"**
SVL Sample ID: **W0D0491-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 08:30
Received: 23-Apr-10
Sampled By: JD

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	5190	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:34	
EPA 6010B	**Copper**	199	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:36	
EPA 6010B	**Potassium**	3000	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:34	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	1.89	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:17	
EPA 353.2	**Nitrate/Nitrite as N**	7.40	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:18	
EPA 9045C	**pH**	7.49	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	0.900	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.55	%	0.150			W019015	HJG	05/06/10 08:30	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.39	pH Units				W019087	ESB	05/06/10 23:30	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:45	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0D0491**
Bayard, NM 88023	Reported: 12-May-10 14:41

Client Sample ID: **NE #3 0-6"**
SVL Sample ID: **W0D0491-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 09:00
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4380	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:40	
EPA 6010B	**Copper**	2150	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:41	
EPA 6010B	**Potassium**	3680	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:40	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.35	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:18	
EPA 353.2	**Nitrate/Nitrite as N**	20.2	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:19	
EPA 9045C	**pH**	5.63	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	1.19	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	2.06	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.69	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.50	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:51	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Client Sample ID: **NE #3 18"-24"**
SVL Sample ID: **W0D0491-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Apr-10 09:20
Received: 23-Apr-10
Sampled By: JD

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4670	mg/kg	4.0	1.0		W018214	AS	05/06/10 13:46	
EPA 6010B	**Copper**	533	mg/kg	1.00	0.21		W018214	AS	05/06/10 13:47	
EPA 6010B	**Potassium**	3540	mg/kg	50.0	4.70		W018214	AS	05/06/10 13:46	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.09	mg/kg	0.300	0.001		W019135	TJK	05/07/10 13:21	
EPA 353.2	**Nitrate/Nitrite as N**	7.25	mg/kg	0.500	0.170		W019269	TJK	05/07/10 15:21	
EPA 9045C	**pH**	6.31	pH Units				W019187	BJF	05/11/10 16:56	
USDA HB60(24)	**Total Organic Carbon**	1.05	%	0.0900			W019015	HJG	05/06/10 08:30	
USDA HB60(24)	**Total Organic Matter**	1.81	%	0.150			W019015	HJG	05/06/10 08:30	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.79	pH Units				W019087	ESB	05/06/10 23:30	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.05	mg/L Extract	0.01	0.006		W019291	DG	05/10/10 12:57	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010B	Calcium	mg/kg	<4.0	1.0	4.0	W018214	06-May-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W018214	06-May-10	
EPA 6010B	Potassium	mg/kg	<50.0	4.70	50.0	W018214	06-May-10	
Classical Chemistry Parameters								
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.001	0.300	W019135	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.500	0.170	0.500	W019269	07-May-10	
USDA HB60(24)	Total Organic Matter	%	<0.150		0.150	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	<0.0900		0.0900	W019015	06-May-10	
SPLP Extraction Parameters								
ASTM E2242-02	Final Fluid pH	pH Units	6.54			W019087	06-May-10	
SPLP Leachates (Metals)								
EPA 6010B	Copper	mg/L Extract	<0.01	0.006	0.01	W019291	10-May-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010B	Calcium	mg/kg	1930	2000	96.5	80 - 120	W018214	06-May-10	
EPA 6010B	Copper	mg/kg	102	100	102	80 - 120	W018214	06-May-10	
EPA 6010B	Potassium	mg/kg	1950	2000	97.6	80 - 120	W018214	06-May-10	
Classical Chemistry Parameters									
EPA 350.1	Ammonia as N	mg/L	294	341	86.3	33 - 167	W019135	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/L	240	234	103	75 - 125	W019269	07-May-10	
EPA 9045C	pH	pH Units	7.46	7.71	96.8	80 - 120	W019187	11-May-10	
USDA HB60(24)	Total Organic Matter	%	51.6	46.4	111	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Matter	%	52.4	46.4	113	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Matter	%	52.6	46.4	113	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Matter	%	52.8	46.4	114	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	29.9	26.9	111	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	30.4	26.9	113	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	30.5	26.9	113	80 - 120	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	30.6	26.9	114	80 - 120	W019015	06-May-10	
SPLP Leachates (Metals)									
EPA 6010B	Copper	mg/L Extract	1.05	1.00	105	80 - 120	W019291	10-May-10	

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	5.25	5.94	12.2	20	W019135	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	66.7	65.1	2.3	20	W019269	07-May-10	D2
EPA 9045C	pH	pH Units	5.83	5.63	3.5	20	W019187	11-May-10	
EPA 9045C	pH	pH Units	6.25	6.06	3.1	20	W019187	11-May-10	
USDA HB60(24)	Total Organic Matter	%	3.78	3.43	9.7	20	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	2.19	1.99	9.6	20	W019015	06-May-10	

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	10200	7560	2000	134	75 - 125	W018214	06-May-10	M1
EPA 6010B	Copper	mg/kg	1750	1270	100	R > 4S	75 - 125	W018214	06-May-10	M3
EPA 6010B	Potassium	mg/kg	5330	2670	2000	133	75 - 125	W018214	06-May-10	M1

Classical Chemistry Parameters

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	9.31	5.94	5.00	67.4	90 - 110	W019135	07-May-10	M2
EPA 350.1	Ammonia as N	mg/kg	3.89	2.35	5.00	30.9	90 - 110	W019135	07-May-10	M2
EPA 353.2	Nitrate/Nitrite as N	mg/kg	30.8	20.2	10.0	106	90 - 110	W019269	07-May-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	81.4	65.1	10.0	R > 4S	90 - 110	W019269	07-May-10	D2,M3
USDA HB60(24)	Total Organic Matter	%	8.65	3.43	5.84	89.4	75 - 125	W019015	06-May-10	
USDA HB60(24)	Total Organic Carbon	%	5.02	1.99	3.38	89.6	75 - 125	W019015	06-May-10	

SPLP Leachates (Metals)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	1.50	0.45	1.00	106	75 - 125	W019291	10-May-10	

Quality Control - MATRIX SPIKE DUPLICATE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	10000	10200	2000	2.1	20	W018214	06-May-10	
EPA 6010B	Copper	mg/kg	1690	1750	100	3.6	20	W018214	06-May-10	
EPA 6010B	Potassium	mg/kg	5160	5330	2000	3.3	20	W018214	06-May-10	

SPLP Leachates (Metals)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	1.51	1.50	1.00	0.5	20	W019291	10-May-10	

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0D0491**
Reported: 12-May-10 14:41

Quality Control - POST DIGESTION SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	9380	7560	2000	90.9	75 - 125	W018214	06-May-10	
EPA 6010B	Potassium	mg/kg	4610	2670	2000	96.9	75 - 125	W018214	06-May-10	

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

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Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-001	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NORTH #3 0"-6"	**Sampling Time**	4:00 PM		
Matrix	Soil	**Sample Location**	W0D0491-01		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1930	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	13.6	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-002	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NORTH #3 18"-24"	**Sampling Time**	4:15 PM		
Matrix	Soil	**Sample Location**	W0D0491-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	588	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	18.7	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-003	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NORTH REF 0-6"	**Sampling Time**	4:30 PM		
Matrix	Soil	**Sample Location**	W0D0491-03		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	340	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	8.8	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-004	**Sampling Date**	4/20/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NORTH REF 18"-24"	**Sampling Time**	4:45 PM		
Matrix	Soil	**Sample Location**	W0D0491-04		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	385	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	17	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7	**Project Name:**	SVL #W0D0491
	HURLEY, NM 88043		
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-005	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NE REF 0-6"	**Sampling Time**	8:05 AM		
Matrix	Soil	**Sample Location**	W0D0491-05		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	368	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	15.7	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-006	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	NE REF 18"-24"	**Sampling Time**	8:10 AM			
Matrix	Soil	**Sample Location**	W0D0491-06			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	385	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	14.1	Percent				%moisture	

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Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-007	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	NE #1 0-6"	**Sampling Time**	9:45 AM			
Matrix	Soil	**Sample Location**	W0D0491-07			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	859	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	9.5	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-008	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NE #1 18"-24"	**Sampling Time**	10:00 AM		
Matrix	Soil	**Sample Location**	W0D0491-08		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	698	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	13.2	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-009	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	NE #2 0-6"	**Sampling Time**	8:30 AM			
Matrix	Soil	**Sample Location**	W0D0491-09			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1300	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	9.4	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-010	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NE #2 18"-24"	**Sampling Time**	8:30 AM		
Matrix	Soil	**Sample Location**	W0D0491-10		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1040	mg/Kg	25	5/10/2010	MAS	SM4500NORGC	
%moisture	18.8	Percent				%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-011	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010 10:30 AM
Client Sample ID	NE #3 0-6"	**Sampling Time**	9:00 AM		
Matrix	Soil	**Sample Location**	W0D0491-11		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	900	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	7.1	Percent				%moisture	

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Client:	FREEPORT MCMORAN INC	**Batch #:**	100428028
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0D0491
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	100428028-012	**Sampling Date**	4/21/2010	**Date/Time Received**	4/28/2010	10:30 AM
Client Sample ID	NE #3 18"-24"	**Sampling Time**	9:20 AM			
Matrix	Soil	**Sample Location**	W0D0491-12			
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	918	mg/Kg	25	5/12/2010	MAS	SM4500NORGC	
%moisture	15.6	Percent				%moisture	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 100428028
Project Name: SVL #W0D0491

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TKN	5.12	mg/kg	5	102.4	70-130	5/12/2010	5/12/2010
TKN	5.45	mg/kg	5	109.0	70-130	5/12/2010	5/12/2010
TKN	5.16	mg/kg	5	103.2	70-130	5/10/2010	5/10/2010

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100428034-002	TKN	171	1340	mg/Kg	1023	114.3	70-130	5/12/2010	5/12/2010
100428033-001	TKN	777	1810	mg/Kg	1075	96.1	70-130	5/12/2010	5/12/2010
100428028-004	TKN	385	1530	mg/Kg	1090	105.0	70-130	5/10/2010	5/10/2010

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TKN	1190	mg/Kg	1044	97.6	11.9	0-25	5/12/2010	5/12/2010
TKN	1840	mg/Kg	1045	101.7	1.6	0-25	5/12/2010	5/12/2010
TKN	1360	mg/Kg	1065	91.5	11.8	0-25	5/10/2010	5/10/2010

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
TKN	ND	mg/Kg	25	5/12/2010	5/12/2010
TKN	ND	mg/Kg	25	5/12/2010	5/12/2010
TKN	ND	mg/Kg	25	5/10/2010	5/10/2010

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287; MT:Cert0095

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Login Report

Customer Name:	FREEPORT MCMORAN INC	**Order ID:**	100428028
	PO BOX 7	**Order Date:**	4/28/2010
	HURLEY NM 88043		
Contact Name:	CHINO MINES COMPANY	**Project Name:**	SVL #W0D0491
Comment:			

Sample #: 100428028-001 **Customer Sample #:** NORTH #3 0"-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-002 **Customer Sample #:** NORTH #3 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-003 **Customer Sample #:** NORTH REF 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-004 **Customer Sample #:** NORTH REF 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/20/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 100428028
Order Date: 4/28/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0D0491

Comment:

Sample #: 100428028-005 **Customer Sample #:** NE REF 0-6"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-006 **Customer Sample #:** NE REF 18"-24"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-007 **Customer Sample #:** NE #1 0-6"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-008 **Customer Sample #:** NE #1 18"-24"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-009 **Customer Sample #:** NE #2 0-6"

Recv'd: ☑ **Collector:** **Date Collected:** 4/21/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 4/28/2010 10:30:00 A
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Customer Name:	FREEPORT MCMORAN INC	**Order ID:**	100428028
	PO BOX 7	**Order Date:**	4/28/2010
	HURLEY NM 88043		
Contact Name:	CHINO MINES COMPANY	**Project Name:**	SVL #W0D0491
Comment:			

Sample #: 100428028-010 **Customer Sample #:** NE #2 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/21/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-011 **Customer Sample #:** NE #3 0-6"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/21/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

Sample #: 100428028-012 **Customer Sample #:** NE #3 18"-24"

Recv'd:	☑	**Collector:**		**Date Collected:**	4/21/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	4/28/2010 10:30:00 A
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	5/10/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	5/10/2010	***Normal (6-10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	4.0
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

15.6

Chain of Custody Record

COC No. 3

WCD0491

Page 1 of 1

Project Name Bi-annual amendment pilot sampling for STSIU	Project Manager Pam Pinson	See Attachment from work plan For directions to Lab
Project Location: STSIU		
Sampler(s): JJ Dabbs		

Analytical Parameters

Chino Mines Company
ELWD.
P.O. Box 7
Hurley, N.M. 88043

Sample Date	Type: time	Type: Grab	Sample Identification (Field ID)	Matrix	No. of Containers	Chain of Custody Seal#
4.20.10	16:00		North #3 0"-6"	Soil	1	
4.20.10	16:15		North #3 18"-24"	Soil	1	
4.20.10	16:30		North Ref 0-6"	Soil	1	
4.20.10	16:45		North Ref 18"-24"	Soil	1	
4.21.10	0805		NE Ref 0-6"	Soil	1	
4.21.10	0810		NE Ref 18-24"	Soil	1	
4.21.10	09:45		NE #1 0-6"	Soil	1	
4.21.10	10:00		NE #1 18"-24"	Soil	1	
4.21.10	08:30		NE #2 0-6"	Soil	1	
4.21.10	08:50		NE #2 18"-24"	Soil	1	
4.21.10	0900		NE #3 0-6"	Soil	1	
4.21.10	0920		NE #3 18-24"	Soil	1	

Special Instructions

Signatures		Date & Time
Relinquished by:	JJ Dabbs · ARCADIS	4/22/10 1343
Received by:		
Relinquished by:		
Received for Laboratory by:		4/23/10 11:40

Shipping Details

Method of Shipment: **UPS RED**

Airbill No.

Lab Addresses: ATTN: Chris Myer
SVL
One Government Gulch
Kellogg, ID 83837-0929

Phone: 208-784-1258
Fax: 208-783-0891

OID COC from 2009

Required Analysis

Chain of Custody Record

WCD0491

Page 1 of 1

COC No. 2009-10-07-001

Project Name

STSIU Amendment Study

Project Manager

Pam Pinson

Project Location: Chino, Hurley, NM

Sampler(s): C. Meyer, ARCADIS

Analytical Parameters

Chino Mines Company
ELWD
P O Box 7
Hurley, NM 88043

Sample Date	Sample Time	Sample Type	Sample Identification (Field ID)	Matrix	No of Containers	pH (9045C) 1	Calcium (6010B) 2	Nitrogen (350.1, 353.2, 351.4) 3	Potassium (6010B) 4	Total Organic Carbon (9060) 5	Copper Solubility (total and SPLP) 6	7	8	9	10	11	12	13	14	15	16	17
10/6/09	11:00	So	WEST-03 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	11:46	So	WEST-02 18-20"	Soil	1	X	X	X	X	X	X											
10/7/09	10:15	So	EAST A-02 18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	545	So	EAST B-01 12-18"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-03 8-16"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	2:22	So	NORTH-01 12-20"	Soil	1	X	X	X	X	X	X											
10/6/09	1123	So	WEST-03 18-24"	Soil	1	X	X	X	X	X	X											
10/6/09	4:30	So	EAST B-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	8:30	So	EAST A-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1045	So	EAST A-01 13-19"	Soil	1	X	X	X	X	X	X											
10/6/09	452	So	EAST B-02 9-15"	Soil	1	X	X	X	X	X	X											
10/6/09		So	NORTH-02 21"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 10-15"	Soil	1	X	X	X	X	X	X											
10/6/09	317	So	NORTH-03 11-19"	Soil	1	X	X	X	X	X	X											
10/6/09	210	So	NORTH-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	245	So	NORTH-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	525	So	EAST B-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	310	So	NORTH-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1030	So	EAST A-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	523	So	EAST B-03 10-18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	EAST B-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A White Rain	Soil	1	X																
10/6/09	1000	So	WEST-02 White Rain	Soil	1	X																

Copper solubility: Modified 1312 extraction, 3010A digestion, 6010B analysis

Signatures	Date & Time
Relinquished by:	
Received by:	
Relinquished by:	
Received for Laboratory by:	

Shipping Details

Method of Shipment Fed Ex

Airbill No.

Lab Addresses ATTN: Chris Myer

SVL
One Government Gulch
Kellogg ID 83837-0929

Phone: 208-784-1258
Fax: 208-783-0891

Special Instructions

Any questions, please call Pam Pinson at 505 537 4213 or Rebecca Lindeman at 303 231 3115 x123

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Sample Receipt Confirmation

Work Order

W0D0491

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client: **Freeport McMoRan - Chino Mines**
Project: **Chino - Amendment**
Project Manager: **Christine Meyer**
Client PO Number: **OG02UZ**

Report To:	**Invoice To:**
Freeport McMoRan - Chino Mines	Freeport McMoRan - Chino Mines
Pam Pinson	Accounts Payable
PO Box 10	PO Box 13308
Bayard, NM 88023	Phoenix, AZ 85502-3308
Phone: (575) 537-4213	Phone: 602-366-8200
Fax: 505-537-8012	Fax: -

Cooler information for **Default Cooler** Temp: 15.6°C Q6: Cooler temp outside 0-6°C **Yes**

Custody Seals **Yes** Containers Intact **Yes** COC/Labels Agree **Yes** Preservation Confirmed **No** Received On Ice **No**

Sample information and analyses assigned		**Comments**	**Removed Analyte**
W0D0491-01	**NORTH #3 0"-6" [Soil] 20-Apr-10 16:00 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-02	**NORTH #3 18"-24" [Soil] 20-Apr-10 16:15 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-03	**NORTH REF 0-6" [Soil] 20-Apr-10 16:30 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-04	**NORTH REF 18"-24" [Soil] 20-Apr-10 16:45 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-05	**NE REF 0-6" [Soil] 21-Apr-10 08:05 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-06	**NE REF 18"-24" [Soil] 21-Apr-10 08:10 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-07	**NE #1 0-6" [Soil] 21-Apr-10 09:45 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-08	**NE #1 18"-24" [Soil] 21-Apr-10 10:00 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-09	**NE #2 0-6" [Soil] 21-Apr-10 08:30 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-10	**NE #2 18"-24" [Soil] 21-Apr-10 08:30 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-11	**NE #3 0-6" [Soil] 21-Apr-10 09:00 Mountain**		
Chino - Amendment Study	TKN Soils		
W0D0491-12	**NE #3 18"-24" [Soil] 21-Apr-10 09:20 Mountain**		
Chino - Amendment Study	TKN Soils		

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

Sample Receipt Confirmation

Work Order

W0D0491

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client: **Freeport McMoRan - Chino Mines**
Project: **Chino - Amendment**
Project Manager: **Christine Meyer**
Client PO Number: **OG02UZ**

Analysis groups included in this work order

Chino - Amendment Study

- 350.1 NH3
- 353.2 NO3+NO2
- pH Soil 9045C
- SPLP 6010B Cu
- SPLP Procedure
- T 6010B Ca
- T 6010B Cu
- T 6010B K
- TKN Soils
- TOM/TOC

Solid samples will be analyzed on an as-received, wet-weight basis unless otherwise instructed.

Work Order Comments:
Copy of report to: Todd Aebie Arcadis Ohio

a ratio of 1:5 soil/solution
using 0.01 M CaCL2 instead of DI water
not adjusting the inital pH of the soil solutoin to 5.0.

Reviewed By

Date

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Sample Receipt Confirmation

Work Order

W0D0491

Date Due: 7-May-10 (10 day TAT)
Received: 23-Apr-10 11:40

Client: **Freeport McMoRan - Chino Mines**
Project: **Chino - Amendment**
Project Manager: **Christine Meyer**
Client PO Number: **OG02UZ**

	W0D0491-01 NORTH #3 0"-6" Solid	W0D0491-02 NORTH #3 18"-24" Solid	W0D0491-03 NORTH REF 0-6" Solid	W0D0491-04 NORTH REF 18"-24" Solid	W0D0491-05 NE REF 0-6" Solid	W0D0491-06 NE REF 18"-24" Solid	W0D0491-07 NE #1 0-6" Solid	W0D0491-08 NE #1 18"-24" Solid
SPLP Procedure	X	X	X	X	X	X	X	X
SPLP-pH	X	X	X	X	X	X	X	X
SPLP-Time	X	X	X	X	X	X	X	X
SPLP-Volume	X	X	X	X	X	X	X	X
SPLP-Weight	X	X	X	X	X	X	X	X
350.1 NH3	X	X	X	X	X	X	X	X
353.2 NO3+NO2	X	X	X	X	X	X	X	X
SPLP 6010B Cu	X	X	X	X	X	X	X	X
T 6010B Ca	X	X	X	X	X	X	X	X
T 6010B Cu	X	X	X	X	X	X	X	X
T 6010B K	X	X	X	X	X	X	X	X
pH Soil 9045C	X	X	X	X	X	X	X	X
TKN Soils	X	X	X	X	X	X	X	X
TOM/TOC	X	X	X	X	X	X	X	X

	W0D0491-09 NE #2 0-6" Solid	W0D0491-10 NE #2 18"-24" Solid	W0D0491-11 NE #3 0-6" Solid	W0D0491-12 NE #3 18"-24" Solid
SPLP Procedure	X	X	X	X
SPLP-pH	X	X	X	X
SPLP-Time	X	X	X	X
SPLP-Volume	X	X	X	X
SPLP-Weight	X	X	X	X
350.1 NH3	X	X	X	X
353.2 NO3+NO2	X	X	X	X
SPLP 6010B Cu	X	X	X	X
T 6010B Ca	X	X	X	X
T 6010B Cu	X	X	X	X
T 6010B K	X	X	X	X
pH Soil 9045C	X	X	X	X
TKN Soils	X	X	X	X
TOM/TOC	X	X	X	X

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.
Please contact Crystal Sevy (208-784-1258) if you have questions regarding the receipt of these samples.

Printed: 4/27/2010 03:29 PM

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0434**
Reported: 01-Nov-10 15:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
REF PLOT # 1	W0J0434-01	Soil	13-Oct-10 10:45	KM/PP	15-Oct-2010
NORTH PLOT	W0J0434-02	Soil	13-Oct-10 13:00	KM/PP	15-Oct-2010
NE REF PLOT	W0J0434-03	Soil	13-Oct-10 10:00	KM/PP	15-Oct-2010
EAST REF PLOT	W0J0434-04	Soil	13-Oct-10 12:00	KM/PP	15-Oct-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0434**
Reported: 01-Nov-10 15:47

Client Sample ID: **REF PLOT # 1**
SVL Sample ID: **W0J0434-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 10:45
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1790	mg/kg	1.00	0.21		W043344	DG	11/01/10 14:05	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	238	TCaCO3/kT	0.3			N/A		10/27/10 16:43	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A		10/27/10 16:43	
Modified Sobek	**ANP**	238	TCaCO3/kT	0.3	0.01		W044023	AGF	10/27/10 15:33	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W044023	HJG	10/27/10 16:43	
Modified Sobek	Non-Sulfate Sulfur	< 0.01	%	0.01			W044023	HJG	10/27/10 15:38	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A		10/27/10 16:43	
Modified Sobek	**Sulfate Sulfur**	0.03	%	0.01			N/A		10/27/10 15:38	
Modified Sobek	**Total Sulfur**	0.03	%	0.01			W044023	HJG	10/26/10 07:42	
Classical Chemistry Parameters										
EPA 9045C	**pH @20.6°C**	7.84	pH Units				W044022	AGF	10/25/10 11:50	
Percent Solids										
Percent Solids	**% Solids**	96.4	%	0.1			W043329	DP	10/25/10 11:01	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0434**
Reported: 01-Nov-10 15:47

Client Sample ID: **NORTH PLOT**
SVL Sample ID: **W0J0434-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 13:00
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	628	mg/kg	1.00	0.21		W043344	DG	11/01/10 14:20	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	3.6	TCaCO3/kT	0.3			N/A		10/27/10 16:45	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A		10/27/10 16:45	
Modified Sobek	**ANP**	3.6	TCaCO3/kT	0.3	0.01		W044023	AGF	10/27/10 15:33	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W044023	HJG	10/27/10 16:45	
Modified Sobek	Non-Sulfate Sulfur	< 0.01	%	0.01			W044023	HJG	10/27/10 15:49	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A		10/27/10 16:45	
Modified Sobek	**Sulfate Sulfur**	0.02	%	0.01			N/A		10/27/10 15:49	
Modified Sobek	**Total Sulfur**	0.02	%	0.01			W044023	HJG	10/26/10 07:45	
Classical Chemistry Parameters										
EPA 9045C	**pH @20.6°C**	6.72	pH Units				W044022	AGF	10/25/10 11:50	
Percent Solids										
Percent Solids	**% Solids**	93.4	%	0.1			W043329	DP	10/25/10 11:01	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0434**
Reported: 01-Nov-10 15:47

Client Sample ID: **NE REF PLOT**
SVL Sample ID: **W0J0434-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 10:00
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	2260	mg/kg	1.00	0.21		W043344	DG	11/01/10 14:26	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	7.0	TCaCO3/kT	0.3			N/A		10/27/10 16:48	
Modified Sobek	**AGP**	0.6	TCaCO3/kT	0.3			N/A		10/27/10 16:48	
Modified Sobek	**ANP**	7.6	TCaCO3/kT	0.3	0.01		W044023	AGF	10/27/10 15:33	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W044023	HJG	10/27/10 16:48	
Modified Sobek	**Non-Sulfate Sulfur**	0.02	%	0.01			W044023	HJG	10/27/10 15:52	
Modified Sobek	**Pyritic Sulfur**	0.02	%	0.01			N/A		10/27/10 16:48	
Modified Sobek	**Sulfate Sulfur**	0.05	%	0.01			N/A		10/27/10 15:52	
Modified Sobek	**Total Sulfur**	0.07	%	0.01			W044023	HJG	10/26/10 07:48	
Classical Chemistry Parameters										
EPA 9045C	**pH @20.6°C**	5.78	pH Units				W044022	AGF	10/25/10 11:50	
Percent Solids										
Percent Solids	**% Solids**	92.0	%	0.1			W043329	DP	10/25/10 11:01	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0434**
Reported: 01-Nov-10 15:47

Client Sample ID: **EAST REF PLOT**
SVL Sample ID: **W0J0434-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 12:00
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Copper**	1340	mg/kg	1.00	0.21		W043344	DG	11/01/10 14:31	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	-0.9	TCaCO3/kT	0.3			N/A		10/27/10 16:51	
Modified Sobek	**AGP**	0.9	TCaCO3/kT	0.3			N/A		10/27/10 16:51	
Modified Sobek	ANP	< 0.3	TCaCO3/kT	0.3	0.01		W044023	AGF	10/27/10 15:33	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W044023	HJG	10/27/10 16:51	
Modified Sobek	**Non-Sulfate Sulfur**	0.03	%	0.01			W044023	HJG	10/27/10 15:54	
Modified Sobek	**Pyritic Sulfur**	0.03	%	0.01			N/A		10/27/10 16:51	
Modified Sobek	**Sulfate Sulfur**	0.11	%	0.01			N/A		10/27/10 15:54	
Modified Sobek	**Total Sulfur**	0.14	%	0.01			W044023	HJG	10/26/10 07:51	
Classical Chemistry Parameters										
EPA 9045C	**pH @20.6°C**	5.76	pH Units				W044022	AGF	10/25/10 11:50	
Percent Solids										
Percent Solids	**% Solids**	94.5	%	0.1			W043329	DP	10/25/10 11:01	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W043344	01-Nov-10	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Modified Sobek	ANP	TCaCO3/kT	<0.3	0.01	0.3	W044023	27-Oct-10	
Modified Sobek	Non-Sulfate Sulfur	%	<0.01		0.01	W044023	27-Oct-10	
Modified Sobek	Total Sulfur	%	<0.01		0.01	W044023	26-Oct-10	
Modified Sobek	Non-extractable Sulfur	%	<0.01		0.01	W044023	27-Oct-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/kg	103	100	103	80 - 120	W043344	01-Nov-10	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Modified Sobek	ANP	TCaCO3/kT	24.5	24.9	98.4	80 - 120	W044023	27-Oct-10	
Modified Sobek	Total Sulfur	%	3.03	3.21	94.4	80 - 120	W044023	26-Oct-10	

Classical Chemistry Parameters

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 9045C	pH	pH Units	7.60	7.71	98.6	80 - 120	W044022	25-Oct-10	

Quality Control - DUPLICATE Data

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Modified Sobek	ANP	TCaCO3/kT	10.4	10.9	4.9	20	W044023	27-Oct-10	
Modified Sobek	Non-Sulfate Sulfur	%	0.92	0.97	6.1	20	W044023	27-Oct-10	
Modified Sobek	Total Sulfur	%	1.07	1.06	0.9	20	W044023	26-Oct-10	
Modified Sobek	Non-extractable Sulfur	%	0.44	0.46	4.6	20	W044023	27-Oct-10	

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 9045C	pH	pH Units	5.45	5.33	2.2	20	W044022	25-Oct-10	

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0J0434**
Bayard, NM 88023	Reported: 01-Nov-10 15:47

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Copper	mg/kg	1860	1790	100	R > 4S	75 - 125	W043344	01-Nov-10	M3

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Copper	mg/kg	2150	1860	100	14.6	20	W043344	01-Nov-10	

Notes and Definitions

M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
WEST #1 0-6"	W0J0435-01	Soil	13-Oct-10 09:00	KM/PP	15-Oct-2010
WEST #1 11-17"	W0J0435-02	Soil	13-Oct-10 09:24	KM/PP	15-Oct-2010
WEST #2 0-6"	W0J0435-03	Soil	13-Oct-10 09:32	KM/PP	15-Oct-2010
WEST #2 6-12"	W0J0435-04	Soil	13-Oct-10 09:35	KM/PP	15-Oct-2010
WEST REF #1 0-6"	W0J0435-05	Soil	13-Oct-10 09:55	KM/PP	15-Oct-2010
WEST REF #1 6-12"	W0J0435-06	Soil	13-Oct-10 09:58	KM/PP	15-Oct-2010
WEST REF #2 0-6"	W0J0435-07	Soil	13-Oct-10 10:05	KM/PP	15-Oct-2010
WEST REF #2 12-18"	W0J0435-08	Soil	13-Oct-10 10:13	KM/PP	15-Oct-2010
NORTH #1 0-6"	W0J0435-09	Soil	13-Oct-10 11:35	KM/PP	15-Oct-2010
NORTH #1 18-24"	W0J0435-10	Soil	13-Oct-10 11:45	KM/PP	15-Oct-2010
NORTH #2 0-6"	W0J0435-11	Soil	13-Oct-10 11:48	KM/PP	15-Oct-2010
NORTH #2 18-24"	W0J0435-12	Soil	13-Oct-10 11:55	KM/PP	15-Oct-2010
NORTH REF #1 0-6"	W0J0435-13	Soil	13-Oct-10 12:35	KM/PP	15-Oct-2010
NORTH REF #1 18-24"	W0J0435-14	Soil	13-Oct-10 12:45	KM/PP	15-Oct-2010
NORTH REF #2 0-6"	W0J0435-15	Soil	13-Oct-10 12:57	KM/PP	15-Oct-2010
NORTH REF #2 18-24"	W0J0435-16	Soil	13-Oct-10 13:02	KM/PP	15-Oct-2010
NE #1 0-6"	W0J0435-17	Soil	14-Oct-10 09:00	KM/PP	15-Oct-2010
NE #1 12-18"	W0J0435-18	Soil	14-Oct-10 09:05	KM/PP	15-Oct-2010
NE #2 0-6"	W0J0435-19	Soil	14-Oct-10 09:12	KM/PP	15-Oct-2010
NE #2 6-12"	W0J0435-20	Soil	14-Oct-10 09:15	KM/PP	15-Oct-2010
NE REF #1 0-6"	W0J0435-21	Soil	14-Oct-10 09:30	KM/PP	15-Oct-2010
NE REF #1 18-22"	W0J0435-22	Soil	14-Oct-10 09:38	KM/PP	15-Oct-2010
NE REF #2 0-6"	W0J0435-23	Soil	14-Oct-10 09:42	KM/PP	15-Oct-2010
NE REF #2 18-24"	W0J0435-24	Soil	14-Oct-10 09:48	KM/PP	15-Oct-2010
EAST #1 0-6"	W0J0435-25	Soil	14-Oct-10 11:00	KM/PP	15-Oct-2010
EAST #1 18-24"	W0J0435-26	Soil	14-Oct-10 11:15	KM/PP	15-Oct-2010
EAST #2 0-6"	W0J0435-27	Soil	14-Oct-10 11:20	KM/PP	15-Oct-2010
EAST #2 18-24"	W0J0435-28	Soil	14-Oct-10 11:28	KM/PP	15-Oct-2010
EAST REF #1 0-6"	W0J0435-29	Soil	14-Oct-10 11:35	KM/PP	15-Oct-2010
EAST REF #1 18-22"	W0J0435-30	Soil	14-Oct-10 11:40	KM/PP	15-Oct-2010
EAST REF #2 0-6"	W0J0435-31	Soil	14-Oct-10 11:43	KM/PP	15-Oct-2010
EAST REF #2 12-18"	W0J0435-32	Soil	14-Oct-10 11:55	KM/PP	15-Oct-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST #1 0-6"**
SVL Sample ID: **W0J0435-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 09:00
Received: 15-Oct-10
Sampled By: KM/PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	5960	mg/kg	4.0	0.8		W043340	AS	10/31/10 11:01	
EPA 6010B	**Copper**	760	mg/kg	1.00	0.21		W043340	AS	10/31/10 11:02	
EPA 6010B	**Potassium**	3270	mg/kg	50.0	8.70		W043340	AS	10/31/10 11:01	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.768	mg/kg	0.300	0.084		W044275	TJK	11/01/10 12:53	
EPA 353.2	**Nitrate/Nitrite as N**	1.75	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:37	
EPA 9045C	**pH @21.4°C**	8.10	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.11	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.92	%	0.150			W044226	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	4.3	%	0.1			W043338	DP	10/25/10 10:57	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.06	pH Units				W043279	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 12:22	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST #1 11-17"**
SVL Sample ID: **W0J0435-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 09:24
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	51700	mg/kg	4.0	0.8		W043340	AS	10/31/10 11:19	
EPA 6010B	**Copper**	431	mg/kg	1.00	0.21		W043340	AS	10/31/10 11:20	
EPA 6010B	**Potassium**	3500	mg/kg	50.0	8.70		W043340	AS	10/31/10 11:19	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.433	mg/kg	0.300	0.084		W044275	TJK	11/01/10 12:57	
EPA 353.2	**Nitrate/Nitrite as N**	7.28	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:40	
EPA 9045C	**pH @21.1°C**	8.00	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.01	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.74	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	11.9	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.37	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 12:39	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST #2 0-6"**
SVL Sample ID: **W0J0435-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 09:32
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	20400	mg/kg	4.0	0.8		W043340	AS	10/31/10 11:25	
EPA 6010B	**Copper**	850	mg/kg	1.00	0.21		W043340	AS	10/31/10 11:26	
EPA 6010B	**Potassium**	2740	mg/kg	50.0	8.70		W043340	AS	10/31/10 11:25	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.554	mg/kg	0.300	0.084		W044275	TJK	11/01/10 12:59	
EPA 353.2	**Nitrate/Nitrite as N**	2.62	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:41	
EPA 9045C	**pH @21.3°C**	8.28	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.07	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.84	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	5.3	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.49	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 12:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST #2 6-12"**
SVL Sample ID: **W0J0435-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 09:35
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	37600	mg/kg	4.0	0.8		W043340	AS	10/31/10 11:31	
EPA 6010B	**Copper**	361	mg/kg	1.00	0.21		W043340	AS	10/31/10 11:32	
EPA 6010B	**Potassium**	3050	mg/kg	50.0	8.70		W043340	AS	10/31/10 11:31	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.519	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:00	
EPA 353.2	**Nitrate/Nitrite as N**	3.34	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:42	
EPA 9045C	**pH @21.3°C**	8.26	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.26	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.17	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	8.9	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.63	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 12:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST REF #1 0-6"**
SVL Sample ID: **W0J0435-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 09:55
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	18100	mg/kg	4.0	0.8		W043340	AS	10/31/10 11:36	
EPA 6010B	**Copper**	1040	mg/kg	1.00	0.21		W043340	AS	10/31/10 11:38	
EPA 6010B	**Potassium**	3070	mg/kg	50.0	8.70		W043340	AS	10/31/10 11:36	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.645	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:01	
EPA 353.2	**Nitrate/Nitrite as N**	1.50	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:43	
EPA 9045C	**pH @18.4°C**	8.30	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.40	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.41	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	5.9	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.69	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 12:56	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST REF #1 6-12"**
SVL Sample ID: **W0J0435-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 09:58
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	46800	mg/kg	4.0	0.8		W043340	AS	10/31/10 11:42	
EPA 6010B	**Copper**	404	mg/kg	1.00	0.21		W043340	AS	10/31/10 11:44	
EPA 6010B	**Potassium**	2980	mg/kg	50.0	8.70		W043340	AS	10/31/10 11:42	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.451	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:03	
EPA 353.2	**Nitrate/Nitrite as N**	1.29	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:44	
EPA 9045C	**pH @20.1°C**	8.25	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.33	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.29	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	8.8	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.68	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:01	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0J0435**
Bayard, NM 88023	Reported: 04-Nov-10 09:38

Client Sample ID: **WEST REF #2 0-6"**

SVL Sample ID: **W0J0435-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 10:05
Received: 15-Oct-10
Sampled By: KM/PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	8720	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:00	
EPA 6010B	**Copper**	705	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:01	
EPA 6010B	**Potassium**	2650	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:00	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.520	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:09	
EPA 353.2	**Nitrate/Nitrite as N**	1.24	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:45	
EPA 9045C	**pH @19.6°C**	8.40	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.40	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.42	%	0.150			W044226	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	5.5	%	0.1			W043338	DP	10/25/10 10:57	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.59	pH Units				W043279	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:18	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **WEST REF #2 12-18"**
SVL Sample ID: **W0J0435-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 10:13
Received: 15-Oct-10
Sampled By: KM/PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	58500	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:06	
EPA 6010B	**Copper**	407	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:07	
EPA 6010B	**Potassium**	2730	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:06	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.533	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:11	
EPA 353.2	**Nitrate/Nitrite as N**	1.21	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:46	
EPA 9045C	**pH @21.0°C**	8.31	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.19	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.05	%	0.150			W044226	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	7.1	%	0.1			W043338	DP	10/25/10 10:57	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.69	pH Units				W043279	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:23	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH #1 0-6"**
SVL Sample ID: **W0J0435-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 11:35
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	9630	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:12	
EPA 6010B	**Copper**	352	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:13	
EPA 6010B	**Potassium**	2390	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:12	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.616	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:12	
EPA 353.2	**Nitrate/Nitrite as N**	1.27	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:51	
EPA 9045C	**pH @20.7°C**	7.27	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.950	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.64	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	8.0	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.96	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.03	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:29	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH #1 18-24"**
SVL Sample ID: **W0J0435-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 11:45
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	23000	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:18	
EPA 6010B	**Copper**	82.0	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:20	
EPA 6010B	**Potassium**	2040	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:18	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.431	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:13	
EPA 353.2	**Nitrate/Nitrite as N**	2.27	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:52	
EPA 9045C	**pH @20.8°C**	7.38	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.510	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	0.870	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	13.9	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.39	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:35	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH #2 0-6"**
SVL Sample ID: **W0J0435-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 11:48
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7830	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:24	
EPA 6010B	**Copper**	885	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:26	
EPA 6010B	**Potassium**	3160	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:24	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.785	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:15	
EPA 353.2	**Nitrate/Nitrite as N**	9.96	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:53	
EPA 9045C	**pH @20.5°C**	6.36	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.00	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.72	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	6.5	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.55	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.13	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:41	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH #2 18-24"**
SVL Sample ID: **W0J0435-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 11:55
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	21300	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:30	
EPA 6010B	**Copper**	92.9	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:32	
EPA 6010B	**Potassium**	2000	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:30	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.486	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:17	
EPA 353.2	**Nitrate/Nitrite as N**	1.02	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:55	
EPA 9045C	**pH @20.8°C**	7.55	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.400	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	0.690	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	15.0	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.26	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:47	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH REF #1 0-6"**
SVL Sample ID: **W0J0435-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 12:35
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5440	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:36	
EPA 6010B	**Copper**	954	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:37	
EPA 6010B	**Potassium**	2750	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:36	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.619	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:19	
EPA 353.2	**Nitrate/Nitrite as N**	6.21	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:56	
EPA 9045C	**pH @20.4°C**	5.98	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.830	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.44	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	4.4	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.99	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	1.08	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:53	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH REF #1 18-24"**
SVL Sample ID: **W0J0435-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 12:45
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	15900	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:42	
EPA 6010B	**Copper**	75.3	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:44	
EPA 6010B	**Potassium**	4460	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:42	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.518	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:20	
EPA 353.2	**Nitrate/Nitrite as N**	1.51	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:57	
EPA 9045C	**pH @20.3°C**	7.50	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.320	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	0.560	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	18.1	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.97	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 13:59	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH REF #2 0-6"**
SVL Sample ID: **W0J0435-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 12:57
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6830	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:49	
EPA 6010B	**Copper**	1070	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:50	
EPA 6010B	**Potassium**	2220	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:49	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.760	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:21	
EPA 353.2	**Nitrate/Nitrite as N**	1.79	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:58	
EPA 9045C	**pH @20.3°C**	6.02	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.620	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.07	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	2.5	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.44	pH Units				W043279	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.30	mg/L Extract	0.01	0.005		W044178	DG	11/03/10 14:05	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NORTH REF #2 18-24"**
SVL Sample ID: **W0J0435-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 13-Oct-10 13:02
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7000	mg/kg	4.0	0.8		W043340	AS	10/31/10 12:55	
EPA 6010B	**Copper**	42.8	mg/kg	1.00	0.21		W043340	AS	10/31/10 12:56	
EPA 6010B	**Potassium**	1800	mg/kg	50.0	8.70		W043340	AS	10/31/10 12:55	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.466	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:28	
EPA 353.2	**Nitrate/Nitrite as N**	0.945	mg/kg	0.500	0.170		W044222	TJK	10/29/10 14:59	
EPA 9045C	**pH @20.3°C**	7.34	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.440	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	0.760	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	8.1	%	0.1			W043338	DP	10/25/10 10:57	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.37	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 12:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NE #1 0-6"**
SVL Sample ID: **W0J0435-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:00
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	3400	mg/kg	4.0	0.8		W043339	AS	11/01/10 12:44	
EPA 6010B	**Copper**	2110	mg/kg	10.0	2.10	10	W043339	DG	11/01/10 15:27	D2
EPA 6010B	**Potassium**	3180	mg/kg	50.0	8.70		W043339	AS	11/01/10 12:44	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.64	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:29	
EPA 353.2	**Nitrate/Nitrite as N**	7.83	mg/kg	0.500	0.170		W044222	TJK	10/29/10 15:00	
EPA 9045C	**pH @20.3°C**	5.41	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.01	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.74	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	4.0	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.23	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	6.80	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 12:59	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NE #1 12-18"**
SVL Sample ID: **W0J0435-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:05
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	12700	mg/kg	4.0	0.8		W043339	AS	11/01/10 12:59	
EPA 6010B	**Copper**	67.7	mg/kg	1.00	0.21		W043339	DG	11/01/10 15:44	
EPA 6010B	**Potassium**	3810	mg/kg	50.0	8.70		W043339	AS	11/01/10 12:59	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.555	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:31	
EPA 353.2	**Nitrate/Nitrite as N**	1.16	mg/kg	0.500	0.170		W044222	TJK	10/29/10 15:05	
EPA 9045C	**pH @20.4°C**	7.22	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.570	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	0.990	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	16.8	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.67	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:05	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NE #2 0-6"**
SVL Sample ID: **W0J0435-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:12
Received: 15-Oct-10
Sampled By: KM/PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	6270	mg/kg	4.0	0.8		W043339	AS	11/01/10 13:04	
EPA 6010B	**Copper**	1020	mg/kg	1.00	0.21		W043339	DG	11/01/10 15:49	
EPA 6010B	**Potassium**	4280	mg/kg	50.0	8.70		W043339	AS	11/01/10 13:04	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.633	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:32	
EPA 353.2	**Nitrate/Nitrite as N**	3.11	mg/kg	0.500	0.170		W044222	TJK	10/29/10 15:06	
EPA 9045C	**pH @19.9°C**	6.49	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	1.00	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.73	%	0.150			W044226	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	11.6	%	0.1			W043337	DP	10/26/10 10:35	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	6.60	pH Units				W043283	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:11	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NE #2 6-12"**
SVL Sample ID: **W0J0435-20 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:15
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6690	mg/kg	4.0	0.8		W043339	AS	11/01/10 13:09	
EPA 6010B	**Copper**	108	mg/kg	1.00	0.21		W043339	DG	11/01/10 15:55	
EPA 6010B	**Potassium**	4420	mg/kg	50.0	8.70		W043339	AS	11/01/10 13:09	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.453	mg/kg	0.300	0.084		W044275	TJK	11/01/10 13:33	
EPA 353.2	**Nitrate/Nitrite as N**	1.90	mg/kg	0.500	0.170		W044222	TJK	10/29/10 15:07	
EPA 9045C	**pH @20.6°C**	7.03	pH Units				W044021	AGF	10/25/10 10:46	
USDA HB60(24)	**Total Organic Carbon**	0.620	%	0.0900			W044226	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.06	%	0.150			W044226	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	13.1	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.04	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:17	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0J0435**
Bayard, NM 88023	Reported: 04-Nov-10 09:38

Client Sample ID: **NE REF #1 0-6"**
SVL Sample ID: **W0J0435-21 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:30
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	3660	mg/kg	4.0	0.8		W043339	AS	11/01/10 13:14	
EPA 6010B	**Copper**	1670	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:00	
EPA 6010B	**Potassium**	3020	mg/kg	50.0	8.70		W043339	AS	11/01/10 13:14	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.735	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:37	
EPA 353.2	**Nitrate/Nitrite as N**	5.56	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:10	
EPA 9045C	**pH @19.7°C**	5.33	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.910	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.57	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	8.4	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.09	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	4.98	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:23	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0J0435**
Bayard, NM 88023	Reported: 04-Nov-10 09:38

Client Sample ID: **NE REF #1 18-22"**
SVL Sample ID: **W0J0435-22 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:38
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	10300	mg/kg	4.0	0.8		W043339	AS	11/01/10 13:19	
EPA 6010B	**Copper**	188	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:06	
EPA 6010B	**Potassium**	3450	mg/kg	50.0	8.70		W043339	AS	11/01/10 13:19	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.486	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:47	
EPA 353.2	**Nitrate/Nitrite as N**	2.55	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:13	
EPA 9045C	**pH @20.7°C**	7.21	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.630	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.09	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	12.4	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.79	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:42	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NE REF #2 0-6"**
SVL Sample ID: **W0J0435-23 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:42
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6080	mg/kg	4.0	0.8		W043339	AS	11/01/10 14:41	
EPA 6010B	**Copper**	4500	mg/kg	10.0	2.10	10	W043339	DG	11/01/10 16:23	D2
EPA 6010B	**Potassium**	4000	mg/kg	50.0	8.70		W043339	AS	11/01/10 14:41	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	21.4	mg/kg	0.600	0.168	2	W044276	TJK	11/01/10 14:35	D2
EPA 353.2	**Nitrate/Nitrite as N**	19.0	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:14	
EPA 9045C	**pH @20.4°C**	5.61	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	1.77	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	3.05	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	5.8	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.41	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.61	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:48	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **NE REF #2 18-24"**
SVL Sample ID: **W0J0435-24 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 09:48
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	19600	mg/kg	4.0	0.8		W043339	AS	11/01/10 14:46	
EPA 6010B	**Copper**	293	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:28	
EPA 6010B	**Potassium**	2730	mg/kg	50.0	8.70		W043339	AS	11/01/10 14:46	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.733	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:49	
EPA 353.2	**Nitrate/Nitrite as N**	2.57	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:19	
EPA 9045C	**pH @20.7°C**	7.40	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.760	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.30	%	0.150			W044227	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	11.5	%	0.1			W043337	DP	10/26/10 10:35	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	6.95	pH Units				W043283	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 13:54	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST #1 0-6"**
SVL Sample ID: **W0J0435-25 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:00
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4090	mg/kg	4.0	0.8		W043339	AS	11/01/10 14:51	
EPA 6010B	**Copper**	1100	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:34	
EPA 6010B	**Potassium**	3990	mg/kg	50.0	8.70		W043339	AS	11/01/10 14:51	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.33	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:51	
EPA 353.2	**Nitrate/Nitrite as N**	12.7	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:20	
EPA 9045C	**pH @20.6°C**	6.82	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	1.47	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.54	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	4.3	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.01	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.38	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:00	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 10	Work Order: **W0J0435**
Bayard, NM 88023	Reported: 04-Nov-10 09:38

Client Sample ID: **EAST #1 18-24"**
SVL Sample ID: **W0J0435-26 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:15
Received: 15-Oct-10
Sampled By: KM/PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	79100	mg/kg	4.0	0.8		W043339	AS	11/01/10 14:56	
EPA 6010B	**Copper**	92.6	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:40	
EPA 6010B	**Potassium**	4440	mg/kg	50.0	8.70		W043339	AS	11/01/10 14:56	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.693	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:52	
EPA 353.2	**Nitrate/Nitrite as N**	1.22	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:21	
EPA 9045C	**pH @21.2°C**	7.34	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.500	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	0.870	%	0.150			W044227	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	13.6	%	0.1			W043337	DP	10/26/10 10:35	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.46	pH Units				W043283	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:07	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST #2 0-6"**
SVL Sample ID: **W0J0435-27 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:20
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	4430	mg/kg	4.0	0.8		W043339	AS	11/01/10 15:01	
EPA 6010B	**Copper**	926	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:45	
EPA 6010B	**Potassium**	4070	mg/kg	50.0	8.70		W043339	AS	11/01/10 15:01	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	2.20	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:53	
EPA 353.2	**Nitrate/Nitrite as N**	29.1	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:22	
EPA 9045C	**pH @20.6°C**	6.33	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	1.20	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	2.07	%	0.150			W044227	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	5.3	%	0.1			W043337	DP	10/26/10 10:35	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.06	pH Units				W043283	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.49	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST #2 18-24"**
SVL Sample ID: **W0J0435-28 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:28
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	91600	mg/kg	4.0	0.8		W043339	AS	11/01/10 15:06	
EPA 6010B	**Copper**	79.4	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:51	
EPA 6010B	**Potassium**	4950	mg/kg	50.0	8.70		W043339	AS	11/01/10 15:06	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.411	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:55	
EPA 353.2	**Nitrate/Nitrite as N**	78.2	mg/kg	2.50	0.850	5	W044223	TJK	10/29/10 16:06	D2
EPA 9045C	**pH @20.7°C**	7.43	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.650	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.12	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	13.7	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.55	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:19	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST REF #1 0-6"**
SVL Sample ID: **W0J0435-29 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:35
Received: 15-Oct-10
Sampled By: KM/PP

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	1750	mg/kg	4.0	0.8		W043339	AS	11/01/10 15:12	
EPA 6010B	**Copper**	904	mg/kg	1.00	0.21		W043339	DG	11/01/10 16:56	
EPA 6010B	**Potassium**	2540	mg/kg	50.0	8.70		W043339	AS	11/01/10 15:12	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.544	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:56	
EPA 353.2	**Nitrate/Nitrite as N**	5.31	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:24	
EPA 9045C	**pH @20.8°C**	5.12	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.730	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.26	%	0.150			W044227	TJK	11/03/10 00:00	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA	**% Moisture**	4.3	%	0.1			W043337	DP	10/26/10 10:35	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	5.08	pH Units				W043283	ESB	11/02/10 11:00	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	9.71	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST REF #1 18-22"**
SVL Sample ID: **W0J0435-30 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:40
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	118000	mg/kg	40.0	8.3	10	W043339	AS	11/01/10 16:28	
EPA 6010B	**Copper**	32.2	mg/kg	1.00	0.21		W043339	DG	11/01/10 17:02	
EPA 6010B	**Potassium**	4180	mg/kg	50.0	8.70		W043339	AS	11/01/10 15:17	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.443	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:57	
EPA 353.2	**Nitrate/Nitrite as N**	3.92	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:25	
EPA 9045C	**pH @21.2°C**	7.46	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.850	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.46	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	12.4	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.95	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:31	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST REF #2 0-6"**
SVL Sample ID: **W0J0435-31 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:43
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	2670	mg/kg	4.0	0.8		W043339	AS	11/01/10 15:32	
EPA 6010B	**Copper**	1050	mg/kg	1.00	0.21		W043339	DG	11/01/10 17:07	
EPA 6010B	**Potassium**	2700	mg/kg	50.0	8.70		W043339	AS	11/01/10 15:32	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.52	mg/kg	0.300	0.084		W044276	TJK	11/01/10 13:59	
EPA 353.2	**Nitrate/Nitrite as N**	11.7	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:26	
EPA 9045C	**pH @20.4°C**	5.28	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.880	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.52	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	5.3	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.95	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	2.72	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:37	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino - Amendment
Work Order: **W0J0435**
Reported: 04-Nov-10 09:38

Client Sample ID: **EAST REF #2 12-18"**
SVL Sample ID: **W0J0435-32 (Soil)**

Sample Report Page 1 of 1

Sampled: 14-Oct-10 11:55
Received: 15-Oct-10
Sampled By: KM/PP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	81000	mg/kg	4.0	0.8		W043339	AS	11/01/10 16:16	
EPA 6010B	**Copper**	276	mg/kg	1.00	0.21		W043339	DG	11/01/10 17:13	
EPA 6010B	**Potassium**	4320	mg/kg	50.0	8.70		W043339	AS	11/01/10 16:16	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.585	mg/kg	0.300	0.084		W044276	TJK	11/01/10 14:07	
EPA 353.2	**Nitrate/Nitrite as N**	10.4	mg/kg	0.500	0.170		W044223	TJK	10/29/10 15:28	
EPA 9045C	**pH @20.5°C**	7.47	pH Units				W044022	AGF	10/25/10 11:50	
USDA HB60(24)	**Total Organic Carbon**	0.740	%	0.0900			W044227	TJK	11/03/10 00:00	
USDA HB60(24)	**Total Organic Matter**	1.28	%	0.150			W044227	TJK	11/03/10 00:00	
Percent Solids										
EPA	**% Moisture**	14.2	%	0.1			W043337	DP	10/26/10 10:35	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.44	pH Units				W043283	ESB	11/02/10 11:00	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W044179	DG	11/03/10 14:56	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Quality Control - BLANK Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	<4.0	0.8	4.0	W043339	01-Nov-10	B7
EPA 6010B	Calcium	mg/kg	<4.0	0.8	4.0	W043340	31-Oct-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W043339	01-Nov-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W043340	31-Oct-10	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W043339	01-Nov-10	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W043340	31-Oct-10	

Classical Chemistry Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.084	0.300	W044275	01-Nov-10	
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.084	0.300	W044276	01-Nov-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.500	0.170	0.500	W044222	29-Oct-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.500	0.170	0.500	W044223	29-Oct-10	
USDA HB60(24)	Total Organic Matter	%	<0.150		0.150	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Matter	%	<0.150		0.150	W044227	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	<0.0900		0.0900	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	<0.0900		0.0900	W044227	03-Nov-10	

SPLP Extraction Parameters

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
ASTM E2242-02	Final Fluid pH	pH Units	6.15			W043279	02-Nov-10	
ASTM E2242-02	Final Fluid pH	pH Units	6.15			W043283	02-Nov-10	

SPLP Leachates (Metals)

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	<0.01	0.005	0.01	W044178	03-Nov-10	
EPA 6010B	Copper	mg/L Extract	<0.01	0.005	0.01	W044179	03-Nov-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	2020	2000	101	80 - 120	W043339	01-Nov-10	
EPA 6010B	Calcium	mg/kg	2020	2000	101	80 - 120	W043340	31-Oct-10	
EPA 6010B	Copper	mg/kg	104	100	104	80 - 120	W043339	01-Nov-10	
EPA 6010B	Copper	mg/kg	108	100	108	80 - 120	W043340	31-Oct-10	
EPA 6010B	Potassium	mg/kg	2050	2000	102	80 - 120	W043339	01-Nov-10	
EPA 6010B	Potassium	mg/kg	2010	2000	101	80 - 120	W043340	31-Oct-10	

Classical Chemistry Parameters

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/L	1.64	1.65	99.6	80 - 120	W044275	01-Nov-10	
EPA 350.1	Ammonia as N	mg/L	1.60	1.65	96.7	80 - 120	W044276	01-Nov-10	
EPA 353.2	Nitrate/Nitrite as N	mg/L	2.43	2.34	104	80 - 120	W044222	29-Oct-10	
EPA 353.2	Nitrate/Nitrite as N	mg/L	2.43	2.34	104	80 - 120	W044223	29-Oct-10	
EPA 9045C	pH	pH Units	7.71	7.71	100	80 - 120	W044021	25-Oct-10	
EPA 9045C	pH	pH Units	7.60	7.71	98.6	80 - 120	W044022	25-Oct-10	
USDA HB60(24)	Total Organic Matter	%	50.2	46.4	108	80 - 120	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Matter	%	49.4	46.4	107	80 - 120	W044227	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	29.1	26.9	108	80 - 120	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	28.7	26.9	107	80 - 120	W044227	03-Nov-10	

SPLP Leachates (Metals)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	0.96	1.00	96.2	80 - 120	W044178	03-Nov-10	

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

SPLP Leachates (Metals) (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	1.12	1.00	112	80 - 120	W044179	03-Nov-10	

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	0.594	0.768	25.6	20	W044275	01-Nov-10	R2
EPA 350.1	Ammonia as N	mg/kg	0.617	0.735	17.6	20	W044276	01-Nov-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	1.59	1.75	9.6	20	W044222	29-Oct-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	5.92	5.56	6.4	20	W044223	29-Oct-10	
EPA 9045C	pH	pH Units	5.45	5.33	2.2	20	W044022	25-Oct-10	
EPA 9045C	pH	pH Units	8.23	8.10	1.6	20	W044021	25-Oct-10	
USDA HB60(24)	Total Organic Matter	%	1.70	1.57	8.0	20	W044227	03-Nov-10	
USDA HB60(24)	Total Organic Matter	%	1.83	1.92	4.8	20	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	0.980	0.910	7.4	20	W044227	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	1.06	1.11	4.6	20	W044226	03-Nov-10	

Percent Solids

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA	% Moisture	%	4.2	4.0	4.9	20	W043337	26-Oct-10	
EPA	% Moisture	%	4.5	4.3	4.6	20	W043338	25-Oct-10	

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	5510	3400	2000	106	75 - 125	W043339	01-Nov-10	
EPA 6010B	Calcium	mg/kg	8290	5960	2000	117	75 - 125	W043340	31-Oct-10	
EPA 6010B	Copper	mg/kg	1980	2110	100	R > 4S	75 - 125	W043339	01-Nov-10	D2,M3
EPA 6010B	Copper	mg/kg	1000	760	100	R > 4S	75 - 125	W043340	31-Oct-10	M3
EPA 6010B	Potassium	mg/kg	5730	3180	2000	127	75 - 125	W043339	01-Nov-10	M1
EPA 6010B	Potassium	mg/kg	6070	3270	2000	140	75 - 125	W043340	31-Oct-10	M1

Classical Chemistry Parameters

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	1.57	0.768	5.00	16.1	90 - 110	W044275	01-Nov-10	M2
EPA 350.1	Ammonia as N	mg/kg	1.37	0.785	5.00	11.8	90 - 110	W044275	01-Nov-10	M2
EPA 350.1	Ammonia as N	mg/kg	1.07	0.735	5.00	6.60	90 - 110	W044276	01-Nov-10	M2
EPA 350.1	Ammonia as N	mg/kg	4.19	2.52	5.00	33.4	90 - 110	W044276	01-Nov-10	M2
EPA 353.2	Nitrate/Nitrite as N	mg/kg	10.7	1.75	10.0	89.6	75 - 125	W044222	29-Oct-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	18.9	9.96	10.0	89.5	75 - 125	W044222	29-Oct-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	15.0	5.56	10.0	94.0	75 - 125	W044223	29-Oct-10	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	20.6	11.7	10.0	88.9	75 - 125	W044223	29-Oct-10	
USDA HB60(24)	Total Organic Matter	%	4.12	1.92	2.92	75.3	75 - 125	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Matter	%	7.09	1.57	5.84	94.5	75 - 125	W044227	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	2.39	1.11	1.69	75.7	75 - 125	W044226	03-Nov-10	
USDA HB60(24)	Total Organic Carbon	%	4.11	0.910	3.38	94.7	75 - 125	W044227	03-Nov-10	

Quality Control - MATRIX SPIKE Data (Continued)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	0.97	0.02	1.00	95.6	75 - 125	W044178	03-Nov-10	
EPA 6010B	Copper	mg/L Extract	1.09	<0.01	1.00	109	75 - 125	W044179	03-Nov-10	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	5380	5510	2000	2.3	20	W043339	01-Nov-10	
EPA 6010B	Calcium	mg/kg	8230	8290	2000	0.7	20	W043340	31-Oct-10	
EPA 6010B	Copper	mg/kg	1940	1980	100	1.7	20	W043339	01-Nov-10	D2
EPA 6010B	Copper	mg/kg	933	1000	100	7.3	20	W043340	31-Oct-10	
EPA 6010B	Potassium	mg/kg	5550	5730	2000	3.1	20	W043339	01-Nov-10	
EPA 6010B	Potassium	mg/kg	6120	6070	2000	0.8	20	W043340	31-Oct-10	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	0.97	0.97	1.00	0.1	20	W044178	03-Nov-10	
EPA 6010B	Copper	mg/L Extract	1.11	1.09	1.00	2.0	20	W044179	03-Nov-10	

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Potassium	mg/kg	4700	3180	2000	76.3	75 - 125	W043339	01-Nov-10	
EPA 6010B	Potassium	mg/kg	5030	3270	2000	88.1	75 - 125	W043340	31-Oct-10	

Notes and Definitions

B7	Target analyte in method blank exceeded method QC limits, but concentrations in samples were at least 10x the blank concentration.
D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
R2	RPD exceeded the laboratory acceptance limit.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-001	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST #1 0-6	**Sampling Time**	9:00 AM		
Matrix	Soil	**Sample Location**	W0J0435-01		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	912	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	4.1	Percent		10/25/2010		%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-002	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST #1 11-17	**Sampling Time**	9:24 AM		
Matrix	Soil	**Sample Location**	W0J0435-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	961	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	10.5	Percent		10/25/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-003	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST #2 0-6	**Sampling Time**	9:32 AM		
Matrix	Soil	**Sample Location**	W0J0435-03		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	985	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	5.7	Percent		10/25/2010	CRW	%moisture	

Anatek Labs, Inc.

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Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-004	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST #2 6-12	**Sampling Time**	9:35 AM		
Matrix	Soil	**Sample Location**	W0J0435-04		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	875	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	9	Percent		10/25/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-005	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST REF #1 0-6	**Sampling Time**	9:55 AM		
Matrix	Soil	**Sample Location**	W0J0435-05		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	866	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	5.5	Percent		10/25/2010	CRW	%moisture	

Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 101020017
Project Name: SVL #W0J0435

Analytical Results Report

Sample Number	101020017-006	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST REF #1 6-12	**Sampling Time**	9:58 AM		
Matrix	Soil	**Sample Location**	W0J0435-06		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1170	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	9	Percent		10/25/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-007	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST REF #2 0-6	**Sampling Time**	10:05 AM		
Matrix	Soil	**Sample Location**	W0J0435-07		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	876	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	3.9	Percent		10/25/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-008	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	WEST REF #2 12-18	**Sampling Time**	10:13 AM		
Matrix	Soil	**Sample Location**	W0J0435-08		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1110	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	6	Percent		10/25/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-009	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH #1 0-6	**Sampling Time**	11:35 AM		
Matrix	Soil	**Sample Location**	W0J0435-09		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	400	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	7.6	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-010	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH #1 18-24	**Sampling Time**	11:45 AM		
Matrix	Soil	**Sample Location**	W0J0435-10		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	389	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	15.1	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-011	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH #2 0-6	**Sampling Time**	11:40 AM		
Matrix	Soil	**Sample Location**	W0J0435-11		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	742	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	5.8	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7	**Project Name:**	SVL #W0J0435
	HURLEY, NM 88043		
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-012	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH #2 18-24	**Sampling Time**	11:55 AM		
Matrix	Soil	**Sample Location**	W0J0435-12		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	370	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	15.7	Percent		10/26/2010	MAS	%moisture	

Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 101020017
Project Name: SVL #W0J0435

Analytical Results Report

Sample Number 101020017-013
Client Sample ID NORTH REF #1 0-6
Matrix Soil
Comments

Sampling Date 10/13/2010
Sampling Time 12:35 PM
Sample Location W0J0435-13

Date/Time Received 10/20/2010 12:30 PM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	711	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	3.5	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-014	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH REF #1 18-24	**Sampling Time**	12:45 PM		
Matrix	Soil	**Sample Location**	W0J0435-14		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	421	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	19.1	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7	**Project Name:**	SVL #W0J0435
	HURLEY, NM 88043		
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-015	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH REF #2 0-6	**Sampling Time**	12:57 PM		
Matrix	Soil	**Sample Location**	W0J0435-15		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	139	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	5.7	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-016	**Sampling Date**	10/13/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NORTH REF #2 18-24	**Sampling Time**	1:02 PM		
Matrix	Soil	**Sample Location**	W0J0435-16		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	264	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	8.1	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7	**Project Name:**	SVL #W0J0435
	HURLEY, NM 88043		
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-017	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE #1 0-6	**Sampling Time**	9:00 AM		
Matrix	Soil	**Sample Location**	W0J0435-17		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	731	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	3.6	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-018	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE #1 12-18	**Sampling Time**	9:05 AM		
Matrix	Soil	**Sample Location**	W0J0435-18		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	498	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	18.4	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-019	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE #2 0-6	**Sampling Time**	9:12 AM		
Matrix	Soil	**Sample Location**	W0J0435-19		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	587	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	10.6	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-020	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE #2 6-12	**Sampling Time**	9:15 AM		
Matrix	Soil	**Sample Location**	W0J0435-20		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	667	mg/Kg	25	10/27/2010	MAS	SM4500NORGC	
%moisture	15.3	Percent		10/26/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-021	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE REF #1 0-6	**Sampling Time**	9:30 AM		
Matrix	Soil	**Sample Location**	W0J0435-21		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	782	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	12.3	Percent		11/1/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-022	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE REF #1 18-22	**Sampling Time**	9:38 AM		
Matrix	Soil	**Sample Location**	W0J0435-22		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	616	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	13.9	Percent		11/1/2010	CRW	%moisture	

Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 101020017
Project Name: SVL #W0J0435

Analytical Results Report

Sample Number 101020017-023
Client Sample ID NE REF #2 0-6
Matrix Soil
Comments

Sampling Date 10/14/2010
Sampling Time 9:42 AM
Sample Location W0J0435-23

Date/Time Received 10/20/2010 12:30 PM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1030	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	8.5	Percent		11/1/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-024	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	NE REF #2 18-24	**Sampling Time**	9:48 AM		
Matrix	Soil	**Sample Location**	W0J0435-24		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	640	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	11.9	Percent		11/1/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-025	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST #1 0-6	**Sampling Time**	11:00 AM		
Matrix	Soil	**Sample Location**	W0J0435-25		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1170	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	4.6	Percent		11/1/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-026	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST #1 18-24	**Sampling Time**	11:15 AM		
Matrix	Soil	**Sample Location**	W0J0435-26		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	518	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	15.8	Percent		11/1/2010	CRW	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-027	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST #2 0-6	**Sampling Time**	11:20 AM		
Matrix	Soil	**Sample Location**	W0J0435-27		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	1190	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	5.3	Percent		11/1/2010	CRW	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-028	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST #2 18-24	**Sampling Time**	11:28 AM		
Matrix	Soil	**Sample Location**	W0J0435-28		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	595	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	16	Percent		11/1/2010	CRW	%moisture	

Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 101020017
Project Name: SVL #W0J0435

Analytical Results Report

Sample Number 101020017-029
Client Sample ID EAST REF #1 0-6
Matrix Soil
Comments

Sampling Date 10/14/2010
Sampling Time 11:35 AM
Sample Location W0J0435-29

Date/Time Received 10/20/2010 12:30 PM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	621	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	5	Percent		11/3/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-030	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST REF #1 18-22	**Sampling Time**	11:40 AM		
Matrix	Soil	**Sample Location**	W0J0435-30		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	685	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	16	Percent		11/3/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-031	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST REF #2 0-6	**Sampling Time**	11:43 AM		
Matrix	Soil	**Sample Location**	W0J0435-31		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	789	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	6.9	Percent		11/3/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Sample Number	101020017-032	**Sampling Date**	10/14/2010	**Date/Time Received**	10/20/2010 12:30 PM
Client Sample ID	EAST REF #2 12-18	**Sampling Time**	11:55 AM		
Matrix	Soil	**Sample Location**	W0J0435-32		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
TKN	542	mg/Kg	25	11/2/2010	MAS	SM4500NORGC	
%moisture	16.3	Percent		11/3/2010	MAS	%moisture	

Client:	FREEPORT MCMORAN INC	**Batch #:**	101020017
Address:	PO BOX 7 HURLEY, NM 88043	**Project Name:**	SVL #W0J0435
Attn:	CHINO MINES COMPANY		

Analytical Results Report

Authorized Signature

John Coddington, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Anatek Labs, Inc.

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Client: FREEPORT MCMORAN INC
Address: PO BOX 7
HURLEY, NM 88043
Attn: CHINO MINES COMPANY

Batch #: 101020017
Project Name: SVL #W0J0435

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TKN	5.04	mg/kg	5	100.8	70-130	11/2/2010	11/2/2010
TKN	5.24	mg/kg	5	104.8	70-130	11/2/2010	11/2/2010
TKN	4.83	mg/kg	5	96.6	70-130	10/27/2010	10/27/2010

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
101020017-030	TKN	685	1750	mg/Kg	1005	106.0	70-130	11/2/2010	11/2/2010
101020017-022	TKN	616	1910	mg/Kg	1195	108.3	70-130	11/2/2010	11/2/2010
101020017-002	TKN	961	1880	mg/Kg	1110	82.8	70-130	10/27/2010	10/27/2010

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TKN	1700	mg/Kg	1055	96.2	2.9	0-25	11/2/2010	11/2/2010
TKN	1860	mg/Kg	1115	111.6	2.9	0-25	11/2/2010	11/2/2010
TKN	1950	mg/Kg	1065	92.9	3.7	0-25	10/27/2010	10/27/2010

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
TKN	ND	mg/Kg	25	11/2/2010	11/2/2010
TKN	ND	mg/Kg	25	11/2/2010	11/2/2010
TKN	ND	mg/Kg	25	10/27/2010	10/27/2010

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

Anatek Labs, Inc.

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Login Report

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0J0435
Comment:

Sample #: 101020017-001 **Customer Sample #:** WEST #1 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-002 **Customer Sample #:** WEST #1 11-17

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-003 **Customer Sample #:** WEST #2 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0J0435
Comment:

Sample #: 101020017-004 **Customer Sample #:** WEST #2 6-12

Recv'd:	☑	**Collector:**		**Date Collected:**	10/13/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-005 **Customer Sample #:** WEST REF #1 0-6

Recv'd:	☑	**Collector:**		**Date Collected:**	10/13/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-006 **Customer Sample #:** WEST REF #1 6-12

Recv'd:	☑	**Collector:**		**Date Collected:**	10/13/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-007 **Customer Sample #:** WEST REF #2 0-6

Recv'd:	☑	**Collector:**		**Date Collected:**	10/13/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00

Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0J0435
Comment:

Sample #: 101020017-008 **Customer Sample #:** WEST REF #2 12-18

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-009 **Customer Sample #:** NORTH #1 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-010 **Customer Sample #:** NORTH #1 18-24

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-011 **Customer Sample #:** NORTH #2 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY

Project Name: SVL #W0J0435

Comment:

Sample #: 101020017-012 **Customer Sample #:** NORTH #2 18-24

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-013 **Customer Sample #:** NORTH REF #1 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-014 **Customer Sample #:** NORTH REF #1 18-24

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-015 **Customer Sample #:** NORTH REF #2 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0J0435
Comment:

Sample #: 101020017-016 **Customer Sample #:** NORTH REF #2 18-24

Recv'd: ☑ **Collector:** **Date Collected:** 10/13/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-017 **Customer Sample #:** NE #1 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-018 **Customer Sample #:** NE #1 12-18

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-019 **Customer Sample #:** NE #2 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name:	FREEPORT MCMORAN INC	**Order ID:**	101020017
	PO BOX 7	**Order Date:**	10/20/2010
	HURLEY NM 88043		
Contact Name:	CHINO MINES COMPANY	**Project Name:**	SVL #W0J0435
Comment:			

Sample #: 101020017-020 **Customer Sample #:** NE #2 6-12

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-021 **Customer Sample #:** NE REF #1 0-6

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-022 **Customer Sample #:** NE REF #1 18-22

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-023 **Customer Sample #:** NE REF #2 0-6

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0J0435
Comment:

Sample #: 101020017-024 **Customer Sample #:** NE REF #2 18-24

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-025 **Customer Sample #:** EAST #1 0-6

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-026 **Customer Sample #:** EAST #1 18-24

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-027 **Customer Sample #:** EAST #2 0-6

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name: FREEPORT MCMORAN INC
PO BOX 7
HURLEY NM 88043

Order ID: 101020017
Order Date: 10/20/2010

Contact Name: CHINO MINES COMPANY
Project Name: SVL #W0J0435
Comment:

Sample #: 101020017-028 **Customer Sample #:** EAST #2 18-24

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-029 **Customer Sample #:** EAST REF #1 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-030 **Customer Sample #:** EAST REF #1 18-22

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Sample #: 101020017-031 **Customer Sample #:** EAST REF #2 0-6

Recv'd: ☑ **Collector:** **Date Collected:** 10/14/2010
Quantity: 1 **Matrix:** Soil **Date Received:** 10/20/2010 12:30:00
Comment:

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

Customer Name:	FREEPORT MCMORAN INC	**Order ID:**	101020017
	PO BOX 7	**Order Date:**	10/20/2010
	HURLEY NM 88043		
Contact Name:	CHINO MINES COMPANY	**Project Name:**	SVL #W0J0435
Comment:			

Sample #: 101020017-032 **Customer Sample #:** EAST REF #2 12-18

Recv'd:	☑	**Collector:**		**Date Collected:**	10/14/2010
Quantity:	1	**Matrix:**	Soil	**Date Received:**	10/20/2010 12:30:00
Comment:					

Test	Method	Due Date	Priority
%Moisture	%moisture	11/1/2010	***Normal (6-10 Days)***
TKN	SM4500NORGC	11/1/2010	***Normal (6-10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	2.6
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

W0J0434

Chain of Custody Record

COC No. 10132010-002

Page 1 of 1

Project Name ~~STSIU Amendment Study~~ pH Study

Project Manager Pam Pinson

Project Location: Chino, Hurley, NM

Sampler(s): K McCauley, P. Pinson

Analytical Parameters

Chino Mines Company
ELWD
P.O. Box 7
Hurley, NM 88043

Sample Date	Sample Time	Sample Type	Sample Identification (Field ID)	Matrix	No. of Containers	pH (9045C) 1	Total Cu (6010B) 2	ABA 3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
• 10/13/10	1045	S	Ref Plot # 1	Soil	1	X	X	X														
10/13/10	1300	S	North Plot	Soil	1	X	X	X														
10/14/10	1000	S	NE Ref Plot	Soil	1	X	X	X														
10/14/10	1200	S	East Ref Plot	Soil	1	X	X	X														

	Signatures	Date & Time
Relinquished by:	Pam Pinson	10-14-10 3:00pm
Received by:		
Relinquished by:		
Received for Laboratory by:		10/15/10 12:00

Shipping Details

Method of Shipment:

Airbill No.

Lab Addresses: ATTN: Chris Myer
SVL
One Government Gulch
Kellogg, ID 83837-0929
Phone: 208-784-1258
Fax: 208-783-0891

Special Instructions

• ID on sample label reads, West Ref Plot # 1. RS 10/15/10

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
WEST-03 0-6"	W9J0467-01	Soil	06-Oct-09 11:00	CM	19-Oct-2009
WEST-02 18-20"	W9J0467-02	Soil	06-Oct-09 11:46	CM	19-Oct-2009
EAST A-02 18"	W9J0467-03	Soil	07-Oct-09 10:15	CM	19-Oct-2009
WEST-01 0-6"	W9J0467-04	Soil	06-Oct-09 00:00	CM	19-Oct-2009
EAST B-01 12-18"	W9J0467-05	Soil	06-Oct-09 05:45	CM	19-Oct-2009
EAST A-03 8-16"	W9J0467-06	Soil	07-Oct-09 00:00	CM	19-Oct-2009
WEST-02 0-6"	W9J0467-07	Soil	06-Oct-09 00:00	CM	19-Oct-2009
EAST A-02 0-6"	W9J0467-08	Soil	07-Oct-09 00:00	CM	19-Oct-2009
NORTH-01 12-20"	W9J0467-09	Soil	06-Oct-09 14:22	CM	19-Oct-2009
WEST-03 18-24"	W9J0467-10	Soil	06-Oct-09 11:23	CM	19-Oct-2009
EAST B-02 0-6"	W9J0467-11	Soil	06-Oct-09 16:30	CM	19-Oct-2009
EAST A-03 0-6"	W9J0467-12	Soil	07-Oct-09 08:30	CM	19-Oct-2009
EAST A-01 13-19"	W9J0467-13	Soil	06-Oct-09 10:45	CM	19-Oct-2009
EAST B-02 9-15"	W9J0467-14	Soil	06-Oct-09 16:52	CM	19-Oct-2009
NORTH-02 21"	W9J0467-15	Soil	06-Oct-09 00:00	CM	19-Oct-2009
WEST-01 10-15"	W9J0467-16	Soil	06-Oct-09 00:00	CM	19-Oct-2009
NORTH-03 11-19"	W9J0467-17	Soil	06-Oct-09 15:17	CM	19-Oct-2009
NORTH-01 0-6"	W9J0467-18	Soil	06-Oct-09 14:10	CM	19-Oct-2009
NORTH-02 0-6"	W9J0467-19	Soil	06-Oct-09 14:45	CM	19-Oct-2009
EAST B-01 0-6"	W9J0467-20	Soil	06-Oct-09 17:25	CM	19-Oct-2009
NORTH-03 0-6"	W9J0467-21	Soil	06-Oct-09 15:10	CM	19-Oct-2009
EAST A-01 0-6"	W9J0467-22	Soil	07-Oct-09 10:30	CM	19-Oct-2009
EAST B-03 10-18"	W9J0467-23	Soil	06-Oct-09 17:23	CM	19-Oct-2009
EAST B-03 0-6"	W9J0467-24	Soil	06-Oct-09 00:00	CM	19-Oct-2009
EAST A WHITE RAIN	W9J0467-25	Soil	07-Oct-09 00:00	CM	19-Oct-2009
WEST-02 WHITE RAIN	W9J0467-26	Soil	06-Oct-09 10:00	CM	19-Oct-2009

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, a notes section, and a subcontracted analyses section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

11/10/09mab: TKN subcontracted

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-03 0-6"**
SVL Sample ID: **W9J0467-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 11:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5130	mg/kg	4.0	1.3		W945093	FEH	11/04/09 21:09	
EPA 6010B	**Copper**	668	mg/kg	1.00	0.08		W945093	FEH	11/04/09 21:10	
EPA 6010B	**Potassium**	2940	mg/kg	50.0	4.70		W945093	FEH	11/04/09 21:09	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.382	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:24	
EPA 353.2	**Nitrate/Nitrite as N**	5.46	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:36	
EPA 9045C	**pH**	7.62	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	0.954	%	0.180			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	94.0	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.02	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 11:22	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-02 18-20"**
SVL Sample ID: **W9J0467-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 11:46
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	42400	mg/kg	4.0	1.3		W945093	FEH	11/04/09 21:25	
EPA 6010B	**Copper**	197	mg/kg	1.00	0.08		W945093	FEH	11/04/09 21:26	
EPA 6010B	**Potassium**	2360	mg/kg	50.0	4.70		W945093	FEH	11/04/09 21:25	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.381	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:29	
EPA 353.2	**Nitrate/Nitrite as N**	2.86	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:37	
EPA 9045C	**pH**	7.59	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	0.858	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	92.2	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.30	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 11:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-02 18"**
SVL Sample ID: **W9J0467-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 10:15
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8100	mg/kg	4.0	1.3		W945093	FEH	11/04/09 21:31	
EPA 6010B	**Copper**	1610	mg/kg	1.00	0.08		W945093	FEH	11/04/09 21:32	
EPA 6010B	**Potassium**	4200	mg/kg	50.0	4.70		W945093	FEH	11/04/09 21:31	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.85	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:31	
EPA 353.2	**Nitrate/Nitrite as N**	8.61	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:40	
EPA 9045C	**pH**	6.60	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.43	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	86.5	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.44	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.15	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 11:46	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-01 0-6"**
SVL Sample ID: **W9J0467-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	22100	mg/kg	4.0	1.3		W945093	FEH	11/04/09 21:36	
EPA 6010B	**Copper**	361	mg/kg	1.00	0.08		W945093	FEH	11/04/09 21:37	
EPA 6010B	**Potassium**	1940	mg/kg	50.0	4.70		W945093	FEH	11/04/09 21:36	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.416	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:32	
EPA 353.2	**Nitrate/Nitrite as N**	2.82	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:41	
EPA 9045C	**pH**	7.72	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	0.662	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	94.0	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.61	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 11:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-01 12-18"**
SVL Sample ID: **W9J0467-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 05:45
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	27600	mg/kg	4.0	1.3		W945093	FEH	11/04/09 21:42	
EPA 6010B	**Copper**	103	mg/kg	1.00	0.08		W945093	FEH	11/04/09 21:43	
EPA 6010B	**Potassium**	4940	mg/kg	50.0	4.70		W945093	FEH	11/04/09 21:42	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.717	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:33	
EPA 353.2	**Nitrate/Nitrite as N**	12.6	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:42	
EPA 9045C	**pH**	7.66	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.43	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	85.4	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	6.62	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.04	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 11:58	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-03 8-16"**
SVL Sample ID: **W9J0467-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	12600	mg/kg	4.0	1.3		W945093	FEH	11/04/09 21:47	
EPA 6010B	**Copper**	602	mg/kg	1.00	0.08		W945093	FEH	11/04/09 21:48	
EPA 6010B	**Potassium**	4340	mg/kg	50.0	4.70		W945093	FEH	11/04/09 21:47	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	3.07	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:40	
EPA 353.2	**Nitrate/Nitrite as N**	18.1	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:43	
EPA 9045C	**pH**	7.22	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.16	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	86.1	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.51	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.14	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:04	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-02 0-6"**
SVL Sample ID: **W9J0467-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	12700	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:03	
EPA 6010B	**Copper**	1280	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:04	
EPA 6010B	**Potassium**	2820	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:03	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.604	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:41	
EPA 353.2	**Nitrate/Nitrite as N**	15.8	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:48	
EPA 9045C	**pH**	7.49	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.23	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	94.9	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.68	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.10	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-02 0-6"**
SVL Sample ID: **W9J0467-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	4850	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:09	
EPA 6010B	**Copper**	3240	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:10	
EPA 6010B	**Potassium**	3610	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:09	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	3.71	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:43	
EPA 353.2	**Nitrate/Nitrite as N**	19.4	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:49	
EPA 9045C	**pH**	4.99	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.58	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	92.6	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	5.75	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	8.47	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:27	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-01 12-20"**
SVL Sample ID: **W9J0467-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 14:22
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8810	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:14	
EPA 6010B	**Copper**	290	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:15	
EPA 6010B	**Potassium**	2200	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:14	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.486	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:44	
EPA 353.2	**Nitrate/Nitrite as N**	10.1	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:50	
EPA 9045C	**pH**	6.84	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	0.611	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	91.8	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.68	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.05	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:33	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-03 18-24"**
SVL Sample ID: **W9J0467-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 11:23
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5310	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:20	
EPA 6010B	**Copper**	847	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:21	
EPA 6010B	**Potassium**	3070	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:20	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.405	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:45	
EPA 353.2	**Nitrate/Nitrite as N**	3.10	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:51	
EPA 9045C	**pH**	7.57	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	0.962	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	91.5	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.92	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:39	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-02 0-6"**
SVL Sample ID: **W9J0467-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 16:30
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	4910	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:25	
EPA 6010B	**Copper**	789	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:26	
EPA 6010B	**Potassium**	4970	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:25	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.974	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:47	
EPA 353.2	**Nitrate/Nitrite as N**	14.7	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:52	
EPA 9045C	**pH**	7.28	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.53	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	87.6	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.07	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.09	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:45	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-03 0-6"**
SVL Sample ID: **W9J0467-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 08:30
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4230	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:30	
EPA 6010B	**Copper**	962	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:31	
EPA 6010B	**Potassium**	3300	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:30	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	6.31	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:49	
EPA 353.2	**Nitrate/Nitrite as N**	46.6	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:53	
EPA 9045C	**pH**	6.58	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.23	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	92.7	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.84	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.37	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:51	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-01 13-19"**
SVL Sample ID: **W9J0467-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 10:45
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	5940	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:36	
EPA 6010B	**Copper**	1440	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:37	
EPA 6010B	**Potassium**	4050	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:36	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	4.53	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:51	
EPA 353.2	**Nitrate/Nitrite as N**	17.2	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:55	
EPA 9045C	**pH**	6.99	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.90	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	88.2	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.30	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.68	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 12:57	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-02 9-15"**
SVL Sample ID: **W9J0467-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 16:52
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	4570	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:41	
EPA 6010B	**Copper**	453	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:42	
EPA 6010B	**Potassium**	4470	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:41	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.731	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:52	
EPA 353.2	**Nitrate/Nitrite as N**	7.94	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:56	
EPA 9045C	**pH**	7.31	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.08	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	85.1	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.23	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.05	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 13:03	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-02 21"**
SVL Sample ID: **W9J0467-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	8520	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:47	
EPA 6010B	**Copper**	493	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:48	
EPA 6010B	**Potassium**	2440	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:47	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.616	mg/kg	0.300	0.001		W944261	TJK	10/30/09 11:59	
EPA 353.2	**Nitrate/Nitrite as N**	15.4	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 14:57	
EPA 9045C	**pH**	6.94	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.32	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	88.7	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.10	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.07	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 13:09	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-01 10-15"**
SVL Sample ID: **W9J0467-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	42300	mg/kg	4.0	1.3		W945093	FEH	11/04/09 22:52	
EPA 6010B	**Copper**	341	mg/kg	1.00	0.08		W945093	FEH	11/04/09 22:53	
EPA 6010B	**Potassium**	2840	mg/kg	50.0	4.70		W945093	FEH	11/04/09 22:52	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	0.394	mg/kg	0.300	0.001		W944261	TJK	10/30/09 12:00	
EPA 353.2	**Nitrate/Nitrite as N**	2.96	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 15:02	
EPA 9045C	**pH**	7.73	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.17	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	90.9	%	0.1			W945115	DP	11/04/09 07:58	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.48	pH Units				W943414	ESB	10/30/09 11:07	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 13:15	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-03 11-19"**
SVL Sample ID: **W9J0467-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 15:17
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	9300	mg/kg	4.0	1.3		W945093	FEH	11/04/09 23:42	
EPA 6010B	**Copper**	974	mg/kg	1.00	0.08		W945093	FEH	11/04/09 23:43	
EPA 6010B	**Potassium**	2720	mg/kg	50.0	4.70		W945093	FEH	11/04/09 23:42	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.84	mg/kg	0.300	0.001		W944261	TJK	10/30/09 12:01	
EPA 353.2	**Nitrate/Nitrite as N**	24.1	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 15:03	
EPA 9045C	**pH**	7.14	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	0.976	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	88.5	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.28	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.13	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 13:58	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-01 0-6"**
SVL Sample ID: **W9J0467-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 14:10
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7880	mg/kg	4.0	1.3		W945093	FEH	11/04/09 23:47	
EPA 6010B	**Copper**	1180	mg/kg	1.00	0.08		W945093	FEH	11/04/09 23:49	
EPA 6010B	**Potassium**	2610	mg/kg	50.0	4.70		W945093	FEH	11/04/09 23:48	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	0.685	mg/kg	0.300	0.001		W944261	TJK	10/30/09 12:03	
EPA 353.2	**Nitrate/Nitrite as N**	45.4	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 15:04	
EPA 9045C	**pH**	6.26	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.63	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	89.9	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.72	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.17	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 14:04	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-02 0-6"**
SVL Sample ID: **W9J0467-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 14:45
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	6840	mg/kg	4.0	1.3		W945093	FEH	11/04/09 23:53	
EPA 6010B	**Copper**	739	mg/kg	1.00	0.08		W945093	FEH	11/04/09 23:54	
EPA 6010B	**Potassium**	4830	mg/kg	50.0	4.70		W945093	FEH	11/04/09 23:53	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.99	mg/kg	0.300	0.001		W944261	TJK	10/30/09 12:04	
EPA 353.2	**Nitrate/Nitrite as N**	34.5	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 15:05	
EPA 9045C	**pH**	6.91	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.16	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	91.6	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.93	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.30	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 14:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-01 0-6"**
SVL Sample ID: **W9J0467-20 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 17:25
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	15600	mg/kg	4.0	1.3		W945093	FEH	11/04/09 23:58	
EPA 6010B	**Copper**	179	mg/kg	1.00	0.08		W945093	FEH	11/04/09 23:59	
EPA 6010B	**Potassium**	5250	mg/kg	50.0	4.70		W945093	FEH	11/04/09 23:58	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.34	mg/kg	0.300	0.001		W944261	TJK	10/30/09 12:05	
EPA 353.2	**Nitrate/Nitrite as N**	23.3	mg/kg	0.200	0.0022		W944281	TJK	10/30/09 15:06	
EPA 9045C	**pH**	7.85	pH Units				W944272	HJG	10/30/09 14:57	
USDA HB60(24)	**Total Organic Carbon**	1.72	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	90.4	%	0.1			W945115	DP	11/04/09 07:58	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.57	pH Units				W943414	ESB	10/30/09 11:07	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.11	mg/L Extract	0.01	0.006		W944268	DG	11/02/09 14:27	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-03 0-6"**
SVL Sample ID: **W9J0467-21 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 15:10
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7870	mg/kg	4.0	1.3		W945094	DG	11/04/09 12:22	
EPA 6010B	**Copper**	1810	mg/kg	10.0	0.83	10	W945094	FEH	11/04/09 15:27	D1
EPA 6010B	**Potassium**	2890	mg/kg	50.0	4.70		W945094	DG	11/04/09 12:22	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	2.91	mg/kg	0.300	0.001		W944262	TJK	10/30/09 12:09	
EPA 353.2	**Nitrate/Nitrite as N**	40.3	mg/kg	0.200	0.0022		W944282	TJK	10/30/09 15:09	
EPA 9045C	**pH**	6.16	pH Units				W944273	HJG	10/30/09 14:58	
USDA HB60(24)	**Total Organic Carbon**	1.97	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	91.9	%	0.1			W945116	DP	11/04/09 07:38	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.52	pH Units				W943415	ESB	10/30/09 11:19	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.25	mg/L Extract	0.01	0.006		W944318	DG	11/02/09 13:22	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-01 0-6"**
SVL Sample ID: **W9J0467-22 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 10:30
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	5140	mg/kg	4.0	1.3		W945094	DG	11/04/09 12:38	
EPA 6010B	**Copper**	3250	mg/kg	10.0	0.83	10	W945094	FEH	11/04/09 15:44	D1
EPA 6010B	**Potassium**	5300	mg/kg	50.0	4.70		W945094	DG	11/04/09 12:38	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	9.26	mg/kg	0.300	0.001		W944262	TJK	10/30/09 12:19	
EPA 353.2	**Nitrate/Nitrite as N**	46.6	mg/kg	0.200	0.0022		W944282	TJK	10/30/09 15:10	
EPA 9045C	**pH**	6.10	pH Units				W944273	HJG	10/30/09 14:58	
USDA HB60(24)	**Total Organic Carbon**	1.42	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	93.9	%	0.1			W945116	DP	11/04/09 07:38	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	6.95	pH Units				W943415	ESB	10/30/09 11:19	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	2.28	mg/L Extract	0.01	0.006		W944318	DG	11/02/09 13:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
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Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-03 10-18"**
SVL Sample ID: **W9J0467-23 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 17:23
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	15600	mg/kg	4.0	1.3		W945094	DG	11/04/09 12:44	
EPA 6010B	**Copper**	139	mg/kg	10.0	0.83	10	W945094	FEH	11/04/09 15:50	D1
EPA 6010B	**Potassium**	5580	mg/kg	50.0	4.70		W945094	DG	11/04/09 12:44	
Classical Chemistry Parameters										
EPA 350.1	**Ammonia as N**	1.11	mg/kg	0.300	0.001		W944262	TJK	10/30/09 12:20	
EPA 353.2	**Nitrate/Nitrite as N**	20.3	mg/kg	0.200	0.0022		W944282	TJK	10/30/09 15:17	
EPA 9045C	**pH**	7.38	pH Units				W944273	HJG	10/30/09 14:58	
USDA HB60(24)	**Total Organic Carbon**	1.01	%	0.0900			W944117	SJK	10/29/09 10:25	
Percent Solids										
Percent Solids	**% Solids**	83.0	%	0.1			W945116	DP	11/04/09 07:38	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.61	pH Units				W943415	ESB	10/30/09 11:19	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.06	mg/L Extract	0.01	0.006		W944318	DG	11/02/09 13:46	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-03 0-6"**
SVL Sample ID: **W9J0467-24 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	5680	mg/kg	4.0	1.3		W945094	DG	11/04/09 12:49	
EPA 6010B	**Copper**	671	mg/kg	10.0	0.83	10	W945094	FEH	11/04/09 15:56	D1
EPA 6010B	**Potassium**	4650	mg/kg	50.0	4.70		W945094	DG	11/04/09 12:49	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 350.1	**Ammonia as N**	4.90	mg/kg	0.300	0.001		W944262	TJK	10/30/09 12:21	
EPA 353.2	**Nitrate/Nitrite as N**	72.8	mg/kg	1.00	0.0110	5	W944282	TJK	10/30/09 15:41	D2
EPA 9045C	**pH**	6.96	pH Units				W944273	HJG	10/30/09 14:58	
USDA HB60(24)	**Total Organic Carbon**	1.26	%	0.0900			W944117	SJK	10/29/09 10:25	

Percent Solids

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Percent Solids	**% Solids**	90.6	%	0.1			W945116	DP	11/04/09 07:38	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.46	pH Units				W943415	ESB	10/30/09 11:19	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.58	mg/L Extract	0.01	0.006		W944318	DG	11/02/09 13:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A WHITE RAIN**
SVL Sample ID: **W9J0467-25 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
EPA 9045C	**pH**	6.90	pH Units				W944273	HJG	10/30/09 14:58	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-02 WHITE RAIN**
SVL Sample ID: **W9J0467-26 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 10:00
Received: 19-Oct-09
Sampled By: CM

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 9045C	**pH**	7.95	pH Units				W944273	HJG	10/30/09 14:58	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010B	Calcium	mg/kg	<4.0	1.3	4.0	W945093	04-Nov-09	
EPA 6010B	Calcium	mg/kg	<4.0	1.3	4.0	W945094	04-Nov-09	
EPA 6010B	Copper	mg/kg	<1.00	0.08	1.00	W945093	04-Nov-09	
EPA 6010B	Copper	mg/kg	<1.00	0.08	1.00	W945094	04-Nov-09	
EPA 6010B	Potassium	mg/kg	<50.0	4.70	50.0	W945093	04-Nov-09	
EPA 6010B	Potassium	mg/kg	<50.0	4.70	50.0	W945094	04-Nov-09	
Classical Chemistry Parameters								
EPA 350.1	Ammonia as N	mg/kg	<0.030	0.0001	0.030	W944261	30-Oct-09	
EPA 350.1	Ammonia as N	mg/kg	<0.030	0.0001	0.030	W944262	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.200	0.0022	0.200	W944281	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.200	0.0022	0.200	W944282	30-Oct-09	
USDA HB60(24)	Total Organic Carbon	%	<0.0900		0.0900	W944117	29-Oct-09	
SPLP Leachates (Metals)								
EPA 6010B	Copper	mg/L Extract	<0.01	0.006	0.01	W944268	02-Nov-09	
EPA 6010B	Copper	mg/L Extract	<0.01	0.006	0.01	W944318	02-Nov-09	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010B	Calcium	mg/kg	1950	2000	97.5	80 - 120	W945094	04-Nov-09	
EPA 6010B	Calcium	mg/kg	1870	2000	93.7	80 - 120	W945093	04-Nov-09	
EPA 6010B	Copper	mg/kg	103	100	103	80 - 120	W945094	04-Nov-09	
EPA 6010B	Copper	mg/kg	99.1	100	99.1	80 - 120	W945093	04-Nov-09	
EPA 6010B	Potassium	mg/kg	2050	2000	103	80 - 120	W945094	04-Nov-09	
EPA 6010B	Potassium	mg/kg	1920	2000	96.2	80 - 120	W945093	04-Nov-09	
Classical Chemistry Parameters									
EPA 350.1	Ammonia as N	mg/L	285	341	83.6	33 - 167	W944261	30-Oct-09	
EPA 350.1	Ammonia as N	mg/L	284	341	83.4	33 - 167	W944262	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/L	112	122	92.0	75 - 125	W944281	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/L	116	122	94.7	75 - 125	W944282	30-Oct-09	
EPA 9045C	pH	pH Units	9.11	9.51	95.8	80 - 120	W944272	30-Oct-09	
EPA 9045C	pH	pH Units	9.07	9.51	95.4	80 - 120	W944273	30-Oct-09	
USDA HB60(24)	Total Organic Carbon	%	16.6	14.4	115	80 - 120	W944117	29-Oct-09	
USDA HB60(24)	Total Organic Carbon	%	17.2	14.4	119	80 - 120	W944117	29-Oct-09	
SPLP Leachates (Metals)									
EPA 6010B	Copper	mg/L Extract	1.03	1.00	103	80 - 120	W944268	02-Nov-09	
EPA 6010B	Copper	mg/L Extract	1.08	1.00	108	80 - 120	W944318	02-Nov-09	

Quality Control - DUPLICATE Data

Classical Chemistry Parameters

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.382	<RL	20	W944261	30-Oct-09	R3
EPA 350.1	Ammonia as N	mg/kg	2.67	2.91	8.3	20	W944262	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	2.85	2.86	0.4	20	W944281	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	55.1	46.6	16.8	20	W944282	30-Oct-09	D2
EPA 9045C	pH	pH Units	6.25	6.16	1.5	20	W944273	30-Oct-09	
EPA 9045C	pH	pH Units	7.30	7.28	0.3	20	W944272	30-Oct-09	
EPA 9045C	pH	pH Units	7.65	7.62	0.4	20	W944272	30-Oct-09	
USDA HB60(24)	Total Organic Carbon	%	0.922	0.954	3.4	20	W944117	29-Oct-09	
USDA HB60(24)	Total Organic Carbon	%	1.55	1.53	1.3	20	W944117	29-Oct-09	

Quality Control - MATRIX SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	10200	7870	2000	119	75 - 125	W945094	04-Nov-09	
EPA 6010B	Calcium	mg/kg	8050	5130	2000	146	75 - 125	W945093	04-Nov-09	M1
EPA 6010B	Copper	mg/kg	1800	1810	100	R > 4S	75 - 125	W945094	04-Nov-09	D1,M3
EPA 6010B	Copper	mg/kg	768	668	100	100	75 - 125	W945093	04-Nov-09	
EPA 6010B	Potassium	mg/kg	5790	2890	2000	145	75 - 125	W945094	04-Nov-09	M1
EPA 6010B	Potassium	mg/kg	5820	2940	2000	144	75 - 125	W945093	04-Nov-09	M1

Classical Chemistry Parameters

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 350.1	Ammonia as N	mg/L	0.556	0.038	0.500	104	90 - 110	W944261	30-Oct-09	
EPA 350.1	Ammonia as N	mg/L	0.603	0.097	0.500	101	90 - 110	W944261	30-Oct-09	
EPA 350.1	Ammonia as N	mg/L	0.795	0.291	0.500	101	90 - 110	W944262	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/L	1.19	0.286	1.00	90.5	90 - 110	W944281	30-Oct-09	
EPA 353.2	Nitrate/Nitrite as N	mg/L	5.87	4.66	1.00	R > 4S	90 - 110	W944281	30-Oct-09	D2,M1
EPA 353.2	Nitrate/Nitrite as N	mg/L	6.47	4.66	1.00	R > 4S	90 - 110	W944282	30-Oct-09	D2,M1
USDA HB60(24)	Total Organic Carbon	%	4.25	0.954	3.38	97.6	75 - 125	W944117	29-Oct-09	
USDA HB60(24)	Total Organic Carbon	%	3.03	1.53	1.69	88.5	75 - 125	W944117	29-Oct-09	

SPLP Leachates (Metals)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	1.03	0.02	1.00	102	75 - 125	W944268	02-Nov-09	
EPA 6010B	Copper	mg/L Extract	1.29	0.25	1.00	104	75 - 125	W944318	02-Nov-09	

Quality Control - MATRIX SPIKE DUPLICATE Data

Yes

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/kg	8740	8050	2000	8.2	20	W945093	04-Nov-09	
EPA 6010B	Calcium	mg/kg	9220	10200	2000	10.5	20	W945094	04-Nov-09	
EPA 6010B	Copper	mg/kg	761	768	100	0.9	20	W945093	04-Nov-09	
EPA 6010B	Copper	mg/kg	1670	1800	100	7.6	20	W945094	04-Nov-09	D1
EPA 6010B	Potassium	mg/kg	6090	5820	2000	4.5	20	W945093	04-Nov-09	
EPA 6010B	Potassium	mg/kg	5290	5790	2000	9.2	20	W945094	04-Nov-09	

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Yes

SPLP Leachates (Metals)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 6010B	Copper	mg/L Extract	1.04	1.03	1.00	0.7	20	W944268	02-Nov-09	
EPA 6010B	Copper	mg/L Extract	1.28	1.29	1.00	1.2	20	W944318	02-Nov-09	

Quality Control - POST DIGESTION SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Calcium	mg/L	85.1	51.3	20.0	169	75 - 125	W945093	05-Nov-09	M1
EPA 6010B	Potassium	mg/kg	4930	2890	2000	102	75 - 125	W945094	04-Nov-09	
EPA 6010B	Potassium	mg/L	30.2	29.4	20.0	4.11	75 - 125	W945093	05-Nov-09	M2

Notes and Definitions

D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
R3	There is no control limit for the RPD if the concentration in the sample is less than five times the reporting limit
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-03 0-6"**
SVL Sample ID: **W9J0467-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 11:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	4.8	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1030	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-02 18-20"**
SVL Sample ID: **W9J0467-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 11:46
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	5.1	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	912	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-02 18"**
SVL Sample ID: **W9J0467-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 10:15
Received: 19-Oct-09
Sampled By: CM

Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
%moisture	**%moisture**	17.7	Percent				KME	02-Nov-09	

Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
SM4500NORGC	**TKN**	1820	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-01 0-6"**
SVL Sample ID: **W9J0467-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	4	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	796	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-01 12-18"**
SVL Sample ID: **W9J0467-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 05:45
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	14.6	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1690	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-03 8-16"**
SVL Sample ID: **W9J0467-06 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	10.1	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1380	mg/Kg	25	10		KME	03-Nov-09	

Client Sample ID: **WEST-02 0-6"**
SVL Sample ID: **W9J0467-07 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	3.3	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1290	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-02 0-6"**

SVL Sample ID: **W9J0467-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	6.5	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1580	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-01 12-20"**
SVL Sample ID: **W9J0467-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 14:22
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	6	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	676	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-03 18-24"**
SVL Sample ID: **W9J0467-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 11:23
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	5.9	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	788	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-02 0-6"**
SVL Sample ID: **W9J0467-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 16:30
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	9	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1630	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-03 0-6"**
SVL Sample ID: **W9J0467-12 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 08:30
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	4.9	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1300	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-01 13-19"**
SVL Sample ID: **W9J0467-13 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 10:45
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	10	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1690	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-02 9-15"**
SVL Sample ID: **W9J0467-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 16:52
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	12.2	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1400	mg/Kg	27	10.8	1.08	KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-02 21"**
SVL Sample ID: **W9J0467-15 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	9.8	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1140	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **WEST-01 10-15"**
SVL Sample ID: **W9J0467-16 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	7.5	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1110	mg/Kg	25	10		KME	03-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-03 11-19"**
SVL Sample ID: **W9J0467-17 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 15:17
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	9.8	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1240	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-01 0-6"**
SVL Sample ID: **W9J0467-18 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 14:10
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	6.2	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1210	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-02 0-6"**
SVL Sample ID: **W9J0467-19 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 14:45
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	7.2	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1340	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-01 0-6"**
SVL Sample ID: **W9J0467-20 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 17:25
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	8.9	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	2290	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines	**Project Name: Chino - Amendment**
PO Box 7	Work Order: **W9J0467**
Hurley, NM 88043	Reported: 10-Nov-09 14:14

Client Sample ID: **NORTH-03 0-6"**
SVL Sample ID: **W9J0467-21 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 15:10
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	6	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1370	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST A-01 0-6"**
SVL Sample ID: **W9J0467-22 (Soil)**

Sample Report Page 1 of 1

Sampled: 07-Oct-09 10:30
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	3.6	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1910	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-03 10-18"**
SVL Sample ID: **W9J0467-23 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 17:23
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	13.7	Percent				KME	02-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	941	mg/Kg	25	10		KME	06-Nov-09	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W9J0467**
Reported: 10-Nov-09 14:14

Client Sample ID: **EAST B-03 0-6"**
SVL Sample ID: **W9J0467-24 (Soil)**

Sample Report Page 1 of 1

Sampled: 06-Oct-09 00:00
Received: 19-Oct-09
Sampled By: CM

Method	Analyte	Result	Units	RL	MDL	Dilution	Analyst	Analyzed	Notes
Subcontracted Analyses - Anatek Labs, Inc. (ID) - %moisture									
%moisture	**%moisture**	8.1	Percent				KME	05-Nov-09	
Subcontracted Analyses - Anatek Labs, Inc. (ID) - SM4500NORGC									
SM4500NORGC	**TKN**	1300	mg/Kg	25	10		KME	06-Nov-09	

W9J0467

Chain of Custody Record

Page 1 of 1

COC No. 2009-10-07-001

Project Name
STSIU Amendment Study

Project Manager
Pam Pinson

Project Location: Chino, Hurley, NM

Sampler(s): C. Meyer, ARCADIS

Analytical Parameters

Chino Mines Company
ELWD
P.O. Box 7
Hurley, NM 88043

Sample Date	Sample Time	Sample Type	Sample Identification (Field ID)	Matrix	No. of Containers	pH (9045C) 1	Calcium (6010B) 2	Nitrogen (350.1, 353.2, 351.4) 3	Potassium (6010B) 4	Total Organic Carbon (9060) 5	Copper Solubility (total and SPLP) 6	7	8	9	10	11	12	13	14	15	16	17
10/6/09	11:00	So	WEST-03 0-6"	Soil	1	X	X	X	X	X	X											
* 10/6/09	11:46	So	WEST-02 18-20"	Soil	1	X	X	X	X	X	X											
o 10/7/09	10:15	So	EAST A-02 18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	545	So	EAST B-01 12-18"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-03 8-16"	Soil	1	X	X	X	X	X	X											
10/6/09		So	WEST-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	2:22	So	NORTH-01 12-20"	Soil	1	X	X	X	X	X	X											
10/6/09	1123	So	WEST-03 18-24"	Soil	1	X	X	X	X	X	X											
10/6/09	4:30	So	EAST B-02 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	8:30	So	EAST A-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1045	So	EAST A-01 13-19"	Soil	1	X	X	X	X	X	X											
10/6/09	452	So	EAST B-02 9-15"	Soil	1	X	X	X	X	X	X											
• 10/6/09		So	NORTH-02 21"	Soil	1	X	X	X	X	X	X											
○ 10/6/09		So	WEST-01 10-15"	Soil	1	X	X	X	X	X	X											
10/6/09	317	So	NORTH-03 11-19"	Soil	1	X	X	X	X	X	X											
10/6/09	210	So	NORTH-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	245	So	NORTH-02 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	525	So	EAST B-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	310	So	NORTH-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09	1030	So	EAST A-01 0-6"	Soil	1	X	X	X	X	X	X											
10/6/09	523	So	EAST B-03 10-18"	Soil	1	X	X	X	X	X	X											
10/6/09		So	EAST B-03 0-6"	Soil	1	X	X	X	X	X	X											
10/7/09		So	EAST A White Rain	Soil	1	X																
10/6/09	1000	So	WEST-02 White Rain	Soil	1	X																

Copper solubility: Modified 1312 extraction, 3010A digestion, 6010B analysis

Signatures	Date & Time
Relinquished by: Kari Thompson	10/15/09 0800
Received by:	
Relinquished by:	
Received for Laboratory by: R. Stubbling	10/19/09 10:25

Shipping Details

Method of Shipment: Fed Ex

Airbill No. 7960 3300 0453

Lab Addresses: ATTN: Chris Myer
SVL
One Government Gulch
Kellogg, ID 83837-0929
Phone: 208-784-1258
Fax: 208-783-0891

Special Instructions

Any questions, please call Pam Pinson at 505.537.4213 or Rebecca Lindeman at 303.231.9115 x123

* ID on sample label reads, WEST 02 18-24" 18-20". KS 10/19/09

o can not READ DEPTH on sample ID

○ ID reads WEST 01 18 24" 10-15".

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
ARC WEST 003 0-6	W8L0277-01	Solid	10-Dec-08 09:00	KT	12-Dec-2008
ARC WEST 003 16-18	W8L0277-02	Solid	10-Dec-08 09:27	KT	12-Dec-2008
ARC WEST 004 0-6	W8L0277-03	Solid	10-Dec-08 09:42	KT	12-Dec-2008
ARC WEST 004 16-19	W8L0277-04	Solid	10-Dec-08 10:08	KT	12-Dec-2008
ARC NORTH 003 0-6	W8L0277-05	Solid	10-Dec-08 11:21	KT	12-Dec-2008
ARC NORTH 003 16-18	W8L0277-06	Solid	10-Dec-08 11:43	KT	12-Dec-2008
ARC NORTH 004 0-6	W8L0277-07	Solid	10-Dec-08 12:00	KT	12-Dec-2008
ARC NORTH 004 18-20	W8L0277-08	Solid	10-Dec-08 12:19	KT	12-Dec-2008
ARC EAST B 003 0-6	W8L0277-09	Solid	10-Dec-08 13:35	KT	12-Dec-2008
ARC EAST B 003 18-20	W8L0277-10	Solid	10-Dec-08 13:52	KT	12-Dec-2008
ARC EAST B 004 0-6	W8L0277-11	Solid	10-Dec-08 14:02	KT	12-Dec-2008
ARC EAST B 004 18-20	W8L0277-12	Solid	10-Dec-08 14:13	KT	12-Dec-2008
ARC EAST A 003 0-6	W8L0277-13	Solid	10-Dec-08 14:22	KT	12-Dec-2008
ARC EAST A 003 18-20	W8L0277-14	Solid	10-Dec-08 14:40	KT	12-Dec-2008
ARC EAST A 004 0-6	W8L0277-15	Solid	10-Dec-08 15:32	KT	12-Dec-2008
ARC EAST A 004 18-20	W8L0277-16	Solid	10-Dec-08 15:43	KT	12-Dec-2008
ARC NORTH 005 0-6	W8L0277-17	Solid	10-Dec-08 12:00	KT	12-Dec-2008

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC WEST 003 0-6**
SVL Sample ID: **W8L0277-01 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 09:00
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	5240	mg/kg	4.0	1.3		W851152	AS	12/28/08 12:49	
EPA 6010B	**Copper**	1250	mg/kg	1.00	0.29		W851152	AS	12/28/08 12:50	
EPA 6010B	**Potassium**	1940	mg/kg	50.0	4.60		W851152	AS	12/28/08 12:49	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	8.5	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 11:56	
Modified Sobek	**ANP**	8.5	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 11:56	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 11:56	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 11:56	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 11:56	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	307	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.357	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:08	
EPA 353.2	**Nitrate/Nitrite as N**	5.48	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:27	
EPA 9045C	**pH**	7.39	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.1	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.58	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 12:10	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC WEST 003 16-18**
SVL Sample ID: **W8L0277-02 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 09:27
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	51500	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:07	
EPA 6010B	**Copper**	378	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:08	
EPA 6010B	**Potassium**	2310	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:07	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	125.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 11:58	
Modified Sobek	**ANP**	125	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 11:58	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 11:58	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 11:58	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 11:58	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	565	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.368	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:12	
EPA 353.2	**Nitrate/Nitrite as N**	3.81	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:30	
EPA 9045C	**pH**	7.43	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.1	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.76	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 12:28	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC WEST 004 0-6**
SVL Sample ID: **W8L0277-03 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 09:42
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	6010	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:12	
EPA 6010B	**Copper**	966	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:14	
EPA 6010B	**Potassium**	2280	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:12	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	6.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 12:01	
Modified Sobek	**ANP**	6.0	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:01	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:01	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:01	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:01	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	487	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	Ammonia as N	< 0.300	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:14	
EPA 353.2	**Nitrate/Nitrite as N**	4.88	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:31	
EPA 9045C	**pH**	7.56	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.1	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.56	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 12:34	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC WEST 004 16-19**
SVL Sample ID: **W8L0277-04 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 10:08
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	47500	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:18	
EPA 6010B	**Copper**	273	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:20	
EPA 6010B	**Potassium**	2660	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:18	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	105.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 12:04	
Modified Sobek	**ANP**	105	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:04	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:04	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:04	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:04	
Classical Chemistry Parameters										
ASA 9	**TKN**	418	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	Ammonia as N	< 0.300	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:15	
EPA 353.2	**Nitrate/Nitrite as N**	2.95	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:32	
EPA 9045C	**pH**	7.53	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	0.90	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.86	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 12:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC NORTH 003 0-6**
SVL Sample ID: **W8L0277-05 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 11:21
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7200	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:24	
EPA 6010B	**Copper**	2380	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:26	
EPA 6010B	**Potassium**	3970	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:24	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	21.5	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	**AGP**	1.1	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:10	
Modified Sobek	**ANP**	22.5	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:38	
Modified Sobek	**Pyritic Sulfur**	0.03	%	0.01			N/A	BJF	12/30/08 01:10	
Modified Sobek	**Sulfate Sulfur**	0.01	%	0.01			N/A	BJF	12/30/08 01:10	
Modified Sobek	**Total Sulfur**	0.05	%	0.01			W853030	BJF	12/29/08 12:07	
Classical Chemistry Parameters										
ASA 9	**TKN**	866	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.885	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:16	
EPA 353.2	**Nitrate/Nitrite as N**	131	mg/kg	2.00	0.0220	10	W851258	SM	12/22/08 12:33	D2
EPA 9045C	**pH**	6.86	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	2.7	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.41	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	1.36	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 12:46	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC NORTH 003 16-18**
SVL Sample ID: **W8L0277-06 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 11:43
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8490	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:30	
EPA 6010B	**Copper**	1080	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:32	
EPA 6010B	**Potassium**	2450	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:30	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	9.7	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	**AGP**	0.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:12	
Modified Sobek	**ANP**	10.0	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:40	
Modified Sobek	**Pyritic Sulfur**	0.01	%	0.01			N/A	BJF	12/30/08 01:12	
Modified Sobek	**Sulfate Sulfur**	< 0.01	%	0.01			N/A	BJF	12/30/08 01:12	
Modified Sobek	**Total Sulfur**	0.02	%	0.01			W853030	BJF	12/29/08 12:09	
Classical Chemistry Parameters										
ASA 9	**TKN**	731	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.716	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:18	
EPA 353.2	**Nitrate/Nitrite as N**	33.6	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:34	
EPA 9045C	**pH**	6.99	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.6	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.44	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.11	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 12:52	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC NORTH 004 0-6**
SVL Sample ID: **W8L0277-07 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 12:00
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	7920	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:48	
EPA 6010B	**Copper**	610	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:49	
EPA 6010B	**Potassium**	2250	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:48	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	13.8	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:15	
Modified Sobek	**ANP**	13.8	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:43	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/30/08 01:15	
Modified Sobek	**Sulfate Sulfur**	0.01	%	0.01			N/A	BJF	12/30/08 01:15	
Modified Sobek	**Total Sulfur**	0.01	%	0.01			W853030	BJF	12/29/08 12:12	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	608	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.417	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:24	
EPA 353.2	**Nitrate/Nitrite as N**	26.8	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:39	
EPA 9045C	**pH**	6.79	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.2	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.26	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.18	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:09	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC NORTH 004 18-20**
SVL Sample ID: **W8L0277-08 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 12:19
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	8590	mg/kg	4.0	1.3		W851152	AS	12/28/08 01:54	
EPA 6010B	**Copper**	549	mg/kg	1.00	0.29		W851152	AS	12/28/08 01:55	
EPA 6010B	**Potassium**	2010	mg/kg	50.0	4.60		W851152	AS	12/28/08 01:54	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	10.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 12:14	
Modified Sobek	**ANP**	10.0	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:14	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:14	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:14	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:14	
Classical Chemistry Parameters										
ASA 9	**TKN**	522	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.690	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:26	
EPA 353.2	**Nitrate/Nitrite as N**	12.3	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:40	
EPA 9045C	**pH**	6.97	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.1	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	6.99	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.09	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 02:30	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST B 003 0-6**
SVL Sample ID: **W8L0277-09 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 13:35
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	4290	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:00	
EPA 6010B	**Copper**	2500	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:01	
EPA 6010B	**Potassium**	2690	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:00	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	1.4	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	**AGP**	1.2	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:18	
Modified Sobek	**ANP**	2.5	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:45	
Modified Sobek	**Pyritic Sulfur**	0.04	%	0.01			N/A	BJF	12/30/08 01:18	
Modified Sobek	**Sulfate Sulfur**	0.06	%	0.01			N/A	BJF	12/30/08 01:18	
Modified Sobek	**Total Sulfur**	0.10	%	0.01			W853030	BJF	12/29/08 12:24	
Classical Chemistry Parameters										
ASA 9	**TKN**	693	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	13.2	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:27	
EPA 353.2	**Nitrate/Nitrite as N**	15.7	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:41	
EPA 9045C	**pH**	4.93	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.3	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	5.83	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	7.60	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST B 003 18-20**
SVL Sample ID: **W8L0277-10 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 13:52
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	5580	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:06	
EPA 6010B	**Copper**	210	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:07	
EPA 6010B	**Potassium**	2590	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:06	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	5.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:20	
Modified Sobek	**ANP**	5.0	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:48	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/30/08 01:20	
Modified Sobek	**Sulfate Sulfur**	0.01	%	0.01			N/A	BJF	12/30/08 01:20	
Modified Sobek	**Total Sulfur**	0.01	%	0.01			W853030	BJF	12/29/08 12:26	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	177	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.398	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:28	
EPA 353.2	**Nitrate/Nitrite as N**	6.46	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:42	
EPA 9045C	**pH**	6.65	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	0.70	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.08	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.01	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:27	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST B 004 0-6**
SVL Sample ID: **W8L0277-11 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 14:02
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	3110	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:11	
EPA 6010B	**Copper**	1810	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:13	
EPA 6010B	**Potassium**	2280	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:11	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	1.9	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	**AGP**	0.6	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:23	
Modified Sobek	**ANP**	2.5	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:51	
Modified Sobek	**Pyritic Sulfur**	0.02	%	0.01			N/A	BJF	12/30/08 01:23	
Modified Sobek	**Sulfate Sulfur**	0.01	%	0.01			N/A	BJF	12/30/08 01:23	
Modified Sobek	**Total Sulfur**	0.03	%	0.01			W853030	BJF	12/29/08 12:29	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	740	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	1.74	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:30	
EPA 353.2	**Nitrate/Nitrite as N**	13.5	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:43	
EPA 9045C	**pH**	4.46	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.0	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	5.53	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	11.7	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:33	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST B 004 18-20**
SVL Sample ID: **W8L0277-12 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 14:13
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	9100	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:17	
EPA 6010B	**Copper**	1380	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:18	
EPA 6010B	**Potassium**	2400	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:17	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	36.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 12:32	
Modified Sobek	**ANP**	36.3	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:32	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:32	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 12:32	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 12:32	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	664	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	1.12	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:32	
EPA 353.2	**Nitrate/Nitrite as N**	6.65	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:45	
EPA 9045C	**pH**	7.05	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.1	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	7.49	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.06	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:39	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST A 003 0-6**
SVL Sample ID: **W8L0277-13 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 14:22
Received: 12-Dec-08
Sampled By: KT

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Calcium**	4420	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:23	
EPA 6010B	**Copper**	996	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:24	
EPA 6010B	**Potassium**	3540	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:23	

Acid/Base Accounting & Sulfur Forms

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Modified Sobek	**ABA**	1.6	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	**AGP**	0.9	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:25	
Modified Sobek	**ANP**	2.5	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:53	
Modified Sobek	**Pyritic Sulfur**	0.03	%	0.01			N/A	BJF	12/30/08 01:25	
Modified Sobek	**Sulfate Sulfur**	0.07	%	0.01			N/A	BJF	12/30/08 01:25	
Modified Sobek	**Total Sulfur**	0.10	%	0.01			W853030	BJF	12/29/08 12:35	

Classical Chemistry Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASA 9	**TKN**	546	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	6.31	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:34	
EPA 353.2	**Nitrate/Nitrite as N**	30.1	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:46	
EPA 9045C	**pH**	5.63	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.1	%	0.090			W851289	SJK	12/23/08 07:32	

SPLP Extraction Parameters

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
ASTM E2242-02	**Final Fluid pH**	6.77	pH Units				W851125	ESB	12/19/08 01:15	

SPLP Leachates (Metals)

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
EPA 6010B	**Copper**	0.33	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:45	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST A 003 18-20**
SVL Sample ID: **W8L0277-14 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 14:40
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	72400	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:29	
EPA 6010B	**Copper**	155	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:30	
EPA 6010B	**Potassium**	4690	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:29	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	148.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:28	
Modified Sobek	**ANP**	148	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:56	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/30/08 01:28	
Modified Sobek	**Sulfate Sulfur**	0.05	%	0.01			N/A	BJF	12/30/08 01:28	
Modified Sobek	**Total Sulfur**	0.05	%	0.01			W853030	BJF	12/29/08 12:38	
Classical Chemistry Parameters										
ASA 9	**TKN**	468	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	1.17	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:35	
EPA 353.2	**Nitrate/Nitrite as N**	10.0	mg/kg	0.200	0.0022		W851258	SM	12/22/08 12:47	
EPA 9045C	**pH**	7.27	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	0.66	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.60	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.03	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:51	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST A 004 0-6**
SVL Sample ID: **W8L0277-15 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 15:32
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	15000	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:35	
EPA 6010B	**Copper**	523	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:36	
EPA 6010B	**Potassium**	5500	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:35	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	50.1	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 01:55	
Modified Sobek	**ANP**	50.1	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 01:55	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 01:55	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 01:55	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 01:55	
Classical Chemistry Parameters										
ASA 9	**TKN**	769	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.847	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:36	
EPA 353.2	**Nitrate/Nitrite as N**	127	mg/kg	2.00	0.0220	10	W851258	SM	12/22/08 12:48	D2
EPA 9045C	**pH**	7.47	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.5	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.67	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.28	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 01:57	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC EAST A 004 18-20**
SVL Sample ID: **W8L0277-16 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 15:43
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	84200	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:41	
EPA 6010B	**Copper**	53.2	mg/kg	1.00	0.29		W851152	AS	12/28/08 02:43	
EPA 6010B	**Potassium**	3670	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:41	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	260.0	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/29/08 01:57	
Modified Sobek	**ANP**	260	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 01:57	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 01:57	
Modified Sobek	Sulfate Sulfur	< 0.01	%	0.01			N/A	BJF	12/29/08 01:57	
Modified Sobek	Total Sulfur	< 0.01	%	0.01			W853030	BJF	12/29/08 01:57	
Classical Chemistry Parameters										
ASA 9	**TKN**	393	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	1.28	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:43	
EPA 353.2	**Nitrate/Nitrite as N**	54.2	mg/kg	0.400	0.0044	2	W851258	SM	12/22/08 02:33	D2
EPA 9045C	**pH**	7.36	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.0	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.70	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.02	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 02:04	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Client Sample ID: **ARC NORTH 005 0-6**
SVL Sample ID: **W8L0277-17 (Solid)**

Sample Report Page 1 of 1

Sampled: 10-Dec-08 12:00
Received: 12-Dec-08
Sampled By: KT

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	**Calcium**	7920	mg/kg	4.0	1.3		W851152	AS	12/28/08 02:59	
EPA 6010B	**Copper**	798	mg/kg	1.00	0.29		W851152	AS	12/28/08 03:00	
EPA 6010B	**Potassium**	2200	mg/kg	50.0	4.60		W851152	AS	12/28/08 02:59	
Acid/Base Accounting & Sulfur Forms										
Modified Sobek	**ABA**	16.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 04:15	
Modified Sobek	AGP	< 0.3	TCaCO3/kT	0.3			N/A	BJF	12/30/08 01:31	
Modified Sobek	**ANP**	16.3	TCaCO3/kT	0.3	0.01		W853030	BJF	12/30/08 04:15	
Modified Sobek	Non-extractable Sulfur	< 0.01	%	0.01			W853030	BJF	12/30/08 12:58	
Modified Sobek	Pyritic Sulfur	< 0.01	%	0.01			N/A	BJF	12/30/08 01:31	
Modified Sobek	**Sulfate Sulfur**	0.01	%	0.01			N/A	BJF	12/30/08 01:31	
Modified Sobek	**Total Sulfur**	0.01	%	0.01			W853030	BJF	12/29/08 02:00	
Classical Chemistry Parameters										
ASA 9	**TKN**	372	mg/kg	5.00	2.20		W851294	SJK	12/24/08 07:00	
EPA 350.1	**Ammonia as N**	0.687	mg/kg	0.300	0.001		W851257	SM	12/19/08 12:44	
EPA 353.2	**Nitrate/Nitrite as N**	23.5	mg/kg	2.00	0.0220	10	W851258	SM	12/22/08 12:54	D1
EPA 9045C	**pH**	6.97	pH Units				W851077	BJF	12/16/08 04:54	
USDA HB60(24)	**Total Organic Carbon**	1.2	%	0.090			W851289	SJK	12/23/08 07:32	
SPLP Extraction Parameters										
ASTM E2242-02	**Final Fluid pH**	7.27	pH Units				W851125	ESB	12/19/08 01:15	
SPLP Leachates (Metals)										
EPA 6010B	**Copper**	0.20	mg/L Extract	0.01	0.004		W851293	AS	12/26/08 02:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Larry A. Drew

Larry Drew
Technical Director

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010B	Calcium	mg/kg	<4.0	1.3	4.0	W851152	28-Dec-08	
EPA 6010B	Copper	mg/kg	<1.00	0.29	1.00	W851152	28-Dec-08	
EPA 6010B	Potassium	mg/kg	<50.0	4.60	50.0	W851152	28-Dec-08	
Acid/Base Accounting & Sulfur Forms								
Modified Sobek	ANP	TCaCO3/kT	<0.3	0.01	0.3	W853030	30-Dec-08	
Modified Sobek	Total Sulfur	%	<0.01		0.01	W853030	29-Dec-08	
Modified Sobek	Non-extractable Sulfur	%	<0.01		0.01	W853030	30-Dec-08	
Classical Chemistry Parameters								
ASA 9	TKN	mg/kg	<5.00	2.20	5.00	W851294	24-Dec-08	
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.001	0.300	W851257	19-Dec-08	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	<0.200	0.0022	0.200	W851258	22-Dec-08	
USDA HB60(24)	Total Organic Carbon	%	<0.090		0.090	W851289	23-Dec-08	
SPLP Leachates (Metals)								
EPA 6010B	Copper	mg/L Extract	<0.01	0.004	0.01	W851293	26-Dec-08	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010B	Calcium	mg/kg	1890	2000	94.3	80 - 120	W851152	28-Dec-08	
EPA 6010B	Copper	mg/kg	96.3	100	96.3	80 - 120	W851152	28-Dec-08	
EPA 6010B	Potassium	mg/kg	1930	2000	96.7	80 - 120	W851152	28-Dec-08	
Acid/Base Accounting & Sulfur Forms									
Modified Sobek	ANP	TCaCO3/kT	83.6	89.8	93.1	85 - 116	W853030	30-Dec-08	
Modified Sobek	Total Sulfur	%	4.30	4.44	96.8	84 - 136	W853030	29-Dec-08	
Classical Chemistry Parameters									
ASA 9	TKN	mg/L	45000	47000	95.7	70 - 130	W851294	24-Dec-08	
EPA 350.1	Ammonia as N	mg/L	267	341	78.3	33 - 167	W851257	19-Dec-08	D2
EPA 353.2	Nitrate/Nitrite as N	mg/L	129	122	106	75 - 125	W851258	22-Dec-08	
EPA 9045C	pH	pH Units	8.99	9.40	95.6	80 - 120	W851077	16-Dec-08	
USDA HB60(24)	Total Organic Carbon	%	26.0	28.7	90.6	80 - 120	W851289	23-Dec-08	
SPLP Leachates (Metals)									
EPA 6010B	Copper	mg/L Extract	1.03	1.00	103	80 - 120	W851293	26-Dec-08	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Acid/Base Accounting & Sulfur Forms									
Modified Sobek	ANP	TCaCO3/kT	7.5	8.5	12.5	20	W853030	30-Dec-08	
Modified Sobek	Total Sulfur	%	<0.01	<0.01	UDL	20	W853030	29-Dec-08	
Modified Sobek	Non-extractable Sulfur	%	<0.01	<0.01	UDL	20	W853030	29-Dec-08	
Classical Chemistry Parameters									
ASA 9	TKN	mg/kg	313	307	1.9	200	W851294	24-Dec-08	
EPA 350.1	Ammonia as N	mg/kg	<0.300	0.357	<RL	20	W851257	19-Dec-08	R3
EPA 353.2	Nitrate/Nitrite as N	mg/kg	5.40	5.48	1.5	20	W851258	22-Dec-08	
EPA 9045C	pH	pH Units	4.52	4.46	1.3	20	W851077	16-Dec-08	
EPA 9045C	pH	pH Units	7.40	7.39	0.1	20	W851077	16-Dec-08	
USDA HB60(24)	Total Organic Carbon	%	1.04	1.05	0.6	20	W851289	23-Dec-08	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	6810	5240	2000	78.2	75 - 125	W851152	28-Dec-08	
EPA 6010B	Copper	mg/kg	1640	1250	100	R > 4S	75 - 125	W851152	28-Dec-08	M3
EPA 6010B	Potassium	mg/kg	4610	1940	2000	134	75 - 125	W851152	28-Dec-08	M1
Classical Chemistry Parameters										
ASA 9	TKN	mg/kg	1370	307	1000	106	77 - 117	W851294	24-Dec-08	
ASA 9	TKN	mg/kg	667	177	1000	49.0	77 - 117	W851294	24-Dec-08	M2
EPA 350.1	Ammonia as N	mg/kg	3.38	0.357	5.00	60.5	90 - 110	W851257	19-Dec-08	M2
EPA 350.1	Ammonia as N	mg/kg	3.19	1.74	5.00	29.1	90 - 110	W851257	19-Dec-08	M2
EPA 353.2	Nitrate/Nitrite as N	mg/kg	15.9	5.48	10.0	104	90 - 110	W851258	22-Dec-08	
EPA 353.2	Nitrate/Nitrite as N	mg/kg	23.3	13.5	10.0	97.6	90 - 110	W851258	22-Dec-08	
USDA HB60(24)	Total Organic Carbon	%	2.74	1.05	1.69	99.8	75 - 125	W851289	23-Dec-08	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	1.04	0.02	1.00	102	75 - 125	W851293	26-Dec-08	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Calcium	mg/kg	6750	6810	2000	0.9	20	W851152	28-Dec-08	
EPA 6010B	Copper	mg/kg	1490	1640	100	10.0	20	W851152	28-Dec-08	
EPA 6010B	Potassium	mg/kg	4580	4610	2000	0.7	20	W851152	28-Dec-08	
SPLP Leachates (Metals)										
EPA 6010B	Copper	mg/L Extract	1.06	1.04	1.00	1.9	20	W851293	26-Dec-08	

Freeport McMoRan - Chino Mines
PO Box 7
Hurley, NM 88043

Project Name: Chino - Amendment
Work Order: **W8L0277**
Reported: 31-Dec-08 10:09

Quality Control - POST DIGESTION SPIKE Data

Metals (Total) by EPA 6000/7000 Methods

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Potassium	mg/kg	3550	1940	2000	80.8	75 - 125	W851152	28-Dec-08	

Notes and Definitions

D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
R3	There is no control limit for the RPD if the concentration in the sample is less than five times the reporting limit
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

2.2°

WBL0277

Chain of Custody Record

COC No. 12102008-001

Page 1 of 1

Project Name		**Analytical Parameters**
B0063516.0000 STSIU Amendment Study	Project Manager Pam Pinson	Chino Mines Company ELWD P.O. Box 7 Hurley, NM 88043
Project Location: Chino, Hurley, NM		
Sampler(s): K. Thompson		

Sample Date	Sample Time	Sample Type	Sample Identification (Field ID)	Matrix	No. of Containers	pH (9045C) 1	Calcium (6010B) 2	Nitrogen (350.1, 353.2, 351.4) 3	Potassium (6010B) 4	Total Organic Carbon (9060) 5	Copper Solubility (total and SPLP) 6	7	8	9	10	11	12	13	14	15	16	17
12/10/08	0900	G	ARC WEST 003 0-6	S	1	X	X	X	X	X	X											
12/10/08	0927	G	ARC WEST 003 16-18	S	1	X	X	X	X	X	X											
12/10/08	0942	G	ARC WEST 004 0-6	S	1	X	X	X	X	X	X											
12/10/08	1008	G	ARC WEST 004 16-19	S	1	X	X	X	X	X	X											
12/10/08	1121	G	ARC NORTH 003 0-6	S	1	X	X	X	X	X	X											
12/10/08	1143	G	ARC NORTH 003 16-18	S	1	X	X	X	X	X	X											
12/10/08	1200	G	ARC NORTH 004 0-6	S	1	X	X	X	X	X	X											
12/10/08	1219	G	ARC NORTH 004 18-20	S	1	X	X	X	X	X	X											
12/10/08	1335	G	ARC EAST B 003 0-6	S	1	X	X	X	X	X	X											
12/10/08	1352	G	ARC EAST B 003 18-20	S	1	X	X	X	X	X	X											
12/10/08	1402	G	ARC EAST B 004 0-6	S	1	X	X	X	X	X	X											
12/10/08	1413	G	ARC EAST B 004 18-20	S	1	X	X	X	X	X	X											
12/10/08	1522	G	ARC EAST A 003 0-6	S	1	X	X	X	X	X	X											
12/10/08	1540	G	ARC EAST A 003 18-20	S	1	X	X	X	X	X	X											
12/10/08	1532	G	ARC EAST A 004 0-6	S	1	X	X	X	X	X	X											
12/10/08	1543	G	ARC EAST A 004 18-20	S	1	X	X	X	X	X	X											
* 12/10/08	1200	G	ARC NORTH 005 0-6	S	1	X	X	X	X	X	X											

Copper solubility: Modified 1312 extraction, 3010A digestion, 6010B analysis PO# 0900vi

Signatures	Date & Time	Shipping Details	Special Instructions
Relinquished by: Pam Pinson	12-11-08 / 1:30	Method of Shipment: UPS Red	Any questions, please call Pam Pinson at 505.537.4213 or Rebecca Lindeman at 303.231.9115 x123
Received by:		Airbill No.	
Relinquished by:		Lab Addresses: ATTN: Chris Myer	
Received for Laboratory by: R. Stribling	12/12/08 12:00	SVL One Government Gulch Kellogg, ID 83837-0929 Phone: 208-784-1258 Fax: 208-783-0891	

* ID on sample label reads, ARC North 005
RS 12/12/08

Appendix F

NMED Comment Letter

NEW MEXICO
ENVIRONMENT DEPARTMENT

Harold Runnels Building
1190 Saint Francis Drive, PO Box 5469
Santa Fe, NM 87502-5469
Telephone (505) 827-0424
www.env.nm.gov

MICHELLE LUJAN GRISHAM
Governor

HOWIE MORALES
Lt. Governor

JAMES KENNEY
Cabinet Secretary - Designate

TBA
Deputy Secretary - Designate

January 8, 2019

Ms. Sherry Burt-Kested, Manager
Environment Services
Freeport-McMoRan Chino Mines Company
P.O. Box 10
Bayard, New Mexico 88023

RE: Response to Year 5 Monitoring Report for Smelter/Tailings Soils Investigation (STSIU) Unit (S/TSIU) Amendment Study Plots, dated November 2017, Chino Administrative Order on Consent

Dear Ms. Burt-Kested:

The New Mexico Environment Department (NMED) has reviewed the subject report dated November 2017. The cover letter and report were dated December 5, 2017. As you may recall, this report has considerable overlap with and is related to the delayed White Rain Study. In January 2018, it was decided to delay the White Rain Study and to use it as an attachment for consideration during the Feasibility Study (FS) process. It is our understanding that due to similar differences of view over many technical details of the two documents, FMI wishes to use this document as an attachment to the FS as well. Therefore, review of this document was delayed to some extent with regards to timing and how to utilize the information gathered during the amendment study in the FS process. Our main concerns are with the conclusions of the report and how to best utilize the data going forward.

While we generally agree with the conclusions that pH adjustment and decompaction of the soils appear to be the most effective remedial techniques for increasing the habitat quality of site-impacted vegetation, few if any quantitative conclusions can be made from the studies. This is primarily due to the initial sampling design which makes comparison of effects from the remediation techniques nearly impossible to compare between sites. In addition, the confounding effects of the January 2008 white rain event including the unknown long-term effects of the event, the lack of collocated data for sampling media at all sites pre- and post-treatment, and the assumptions regarding soil disturbance from anecdotal areas outside of the study plots further complicate the analyses in the report and increase the uncertainty in the conclusions that can be reached with confidence from those analyses.

The data included in the study should be used in evaluating remedial technologies, but it is our opinion that the results of this study should be used only as part of the remedial decision-making process in the Feasibility Study. As such, the data from this study must be supported by the more robust data from the Phytotoxicity Study and from other sources. Although the amendment study conclusions indicate that pH adjustment and soil decompaction should only be used in a narrow range of site conditions, the decision to not consider or use the individual or combined technologies discussed in the report is not adequately supported by the results of this study for areas of the site outside of those for which the conclusions recommended their use.

We recommend that the adjustment of soil pH, soil decompaction and possibly soil removal should be evaluated on a location-by-location basis in the FS for areas with cupric ion activity (pCu^{2+}) lower than the pre-FS Remedial Action Criteria (pre-FS RAC) Probably Effects Level (PEL = 5 or lower where total copper in soil > 327 mg/kg) and/or where total copper in soils is greater than 1,600 mg/kg. Consideration of the existing vegetation community quality should be considered along with the total copper and pH in the soils in making feasibility study decisions. The soil type, slope, and overall short- and long-term benefit of any remedial action to the vegetation community and the wildlife habitat it provides should be considered for each location.

We remain concerned with the unsupported conclusions in the amendment plot study due to all the uncertainty and confounding circumstances. However, we believe the amendment plot study led to our further understanding of what may be utilized as a remedy to reduce high copper or low pH conditions. This study along with the phytotoxicity study should help in the decision making for the FS and Record of Decision for the STSIU.

If you have any questions, please contact me at (575) 956-1550.

Sincerely,

David W Mercer

David Mercer, Chino AOC Project Manager
Mining Environmental Compliance Section
Ground Water Quality Bureau
New Mexico Environment Department
Silver City Field Office

DWM: dwm

cc:

Kurt Vollbrecht, NMED (via email)
Joseph Fox, NMED (via email)
Petra Sanchez, USEPA (via email)
Alicia Voss, Freeport-McMoRan Inc. (via email)
Pam Pinson, Freeport-McMoRan Chino Mines Company (via email)
Mark Lewis, Formation, Inc. (via email)
Joe Allen, Formation, Inc. (via email)