



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

Sherry Burt-Kested
Manager, Environmental Services
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October 31, 2017

Certified Mail #70160750000113392885
Return Receipt Requested

Mr. Kurt Vollbrecht, Manager
New Mexico Environment Department
Ground Water Quality Bureau
Mining Environmental Compliance Section
P. O. Box 5624
Santa Fe, New Mexico 87502

Dear Mr. Vollbrecht:

Re: Annual Monitoring Report, Groundhog Mine Site IRA
Hanover-Whitewater Creeks Investigation Unit, Chino AOC

Freeport-McMoRan Chino Mines Company (Chino) submits the attached Annual Monitoring Report for the completed Groundhog Mine Site Interim Remedial Action (IRA) for the monitoring period ending September 30, 2017. The Groundhog Mine Site IRA was performed by Chino pursuant to requirements of the Administrative Order on Consent between the New Mexico Environment Department (NMED) and Chino.

As per Section 6.0 of the IRA Completion Report dated June 10, 2009, this annual monitoring report includes the bulleted information listed below with the exception of the annual vegetation monitoring survey. Chino has performed a quantitative five year vegetation survey as per the Completion Report requirements which was submitted to NMED September 30, 2016. NMED approved the *Vegetation Monitoring Report for the Groundhog Mine Site and Small Historic Stockpile Sites Interim Remedial Action* in a letter dated August 31, 2017 following Chino's letter which provided responses to their comment letter on June 13, 2017.

- Data tabulation sheet of analytical results screened against NM Groundwater Quality Standards from monitoring well and surface water samples collected at the Groundhog Mine site;
- Copies of the original laboratory data sheets; and
- The quarterly erosion surveys.

Additionally, this report includes information described in Section 6.0 of the Completion Report for the Osceolla, CG Bell, and Tenderfoot B Stockpiles IRA. These three historical mine sites are proximal and have similar requirements as the Groundhog IRA. The five year quantitative vegetation survey report submitted September 30, 2016 also addresses these sites and thus no further annual vegetation surveys are required as provided in the Completion Report. The following information is also attached for these stockpiles:

- Quarterly erosion reports for the three historic small stockpiles are included with the Groundhog Mine Site quarterly monitoring survey.
- Also included are monitoring reports for the Star Stockpile.
- Figure 1 illustrates locations for all of the IRA sites.

The attached ground water quality data are for monitor wells GH-2004-2S and GH-2004-2D. See Figure 1 for well locations. Noted in the shallow ground water quality is a trend beginning in 2009

which shows an increase in concentrations for cadmium, manganese, sulfate, TDS, and zinc. Chino currently attributes this to oxidation in underground workings, and is being addressed as part of the Discharge Permit (DP) 1340 Site Wide Abatement (SWA) process. A *Draft Revised Final Site Investigation Report* under, Site Wide Stage 1 Abatement dated March 30, 2016 is under review by NMED that includes the Groundhog Mine Site.

The other water quality data in the table are from three surface impoundment locations. The surface impoundment sampling locations include the Lower Stormwater Sump "GH-Sump" and the Lower Stormwater Pond "GH-Lower Pond" which make up the Groundhog Mine seepage collection system located up gradient of, and including the headwall. See Figure 1. Surface water from this collection system when present is pumped to Reservoir 17 for use as process water. The third surface impoundment sample site is the Upper Stormwater Pond "GH-Upper Pond" which was removed during the supplemental site remediation in 2011 as the containment was no longer needed to alleviate subsurface flow through the adjacent stockpile material supporting the old pipeline corridor. Sampling of this site ceased upon its removal. This pond was located north of the haul road that divides the Groundhog Mine site.

Chino has continued monitoring surface water quality for improvements from remediation at this seepage collection system for approximately ten years as it is the downstream drainage endpoint for the Groundhog Mine Site. Sample results are provided in this annual report as required in the Groundhog IRA Completion Report to establish improving water quality that upon reaching standards, and following the Record Of Decision, the watershed surface water from the remediated mine site runoff would be allowed to flow into Whitewater Creek.

Current, active mining operations include a tailing and process water pipeline corridor that divides the IRA site and the GH-Sump and GH-Lower Pond are ideally situated for secondary containment for leaks from the active pipelines. As such, they are included as part of the contingency pipeline spill containment system as described under Discharge Permit DP-213. A pipeline spill in February 2017 was captured by the ponds and although the spilled material was completely removed, recent sample data from GH-Lower Pond now reflects residual tailing effects. Therefore, this portion of the Groundhog Mine Site can no longer be considered part of the IRA as the remedial objectives cannot be met.

Chino proposes the post reclamation monitoring language in the Completion Report be amended such that the surface water is no longer monitored, the seepage collection system and drainage be excluded from the IRA as they are now part of operations and utilized for process water containment. The seepage collection system as indicated on Figure 2 would be designated as mine operations infrastructure as is the current haul road, pipeline corridors, and utility lines that divide the IRA site into different sections. Pertinent language from Section 6.0 of the Completion Report currently states the following:

6.0 POST-RECLAMATION MONITORING

This section presents the post-reclamation monitoring plan for the Groundhog Mine Site. The plan includes monitoring water quality The Groundhog site will remain under the oversight of the Chino AOC at least until the Record of Decision for the Hanover and Whitewater Creeks Investigation Unit has been approved by NMED. Monitoring may then be included as part of the long-term closeout actions for Chino under DP-1340.

6.1 Water-Quality Monitoring

Surface water will be sampled semiannually from three locations. Surface water from the upper and lower stormwater ponds will be sampled semiannually if water is present.

Samples will also be collected semiannually from the lower stormwater sump (which is a standpipe in the pond footprint) if water is present. Water sampling will be conducted in September and March, This effort tries to collect late winter/early spring runoff and summer monsoon flows. Results will be submitted in the Groundhog Annual Monitoring Report, due at the end of October.

While some variability in the data over time is expected due to seasonal effects and the amount of precipitation prior to the sampling event, the concentrations are expected to reach consistent levels as vegetation stabilizes the soil cover and disturbed bedrock surfaces are exposed to rainfall and runoff. Evidence of decreasing metals concentrations and increasing pH was shown by the data collected during installation of the soil cover and these trends are expected to continue now that the interim closure is complete. Once stabilization is indicated by semiannual sampling data, sampling frequency may increase to quarterly to establish that remedial action criteria established in the ROD have been met.

..... Results of surface and groundwater monitoring will be reported to NMED annually. Once surface-water quality meets remedial action criteria established in the ROD, the cutoff wall may be removed, allowing Groundhog Mine Site stormwater to flow through the unnamed tributary and then into Whitewater Creek. The monitoring wells may then be incorporated into DP-526.

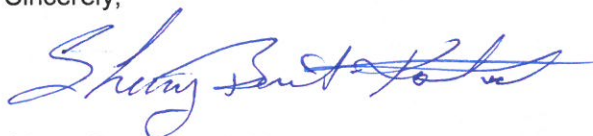
..... Since removal of the stockpiles, metal concentrations have decreased and the pH has increased, showing some water-quality improvement. Water quality is expected to continue to improve as the soil cover becomes stabilized by vegetation. When water meets the criteria necessary to be discharged off site, the site will be included in the site-wide Storm Water Pollution Prevention Plan (SWPPP), pursuant to the Environmental Protection Agency's NPDES, Multi-Sector General Permit program.

Chino proposes to monitor the surface water and groundwater for the following suite of analytes: cadmium, calcium, cobalt, copper, fluoride, iron, magnesium, manganese, nickel, lead, zinc, pH, total dissolved solids, and sulfate. These analytes have been detected in samples from the lower stormwater sump during semiannual monitoring ... and were detected in SPLP leachate from samples of the stockpile material during the initial site investigation (Golder, 2001). This list of analytes also includes the metals detected in elevated concentrations in the bedrock surface samples discussed in Section 5.3.2.

Chino will continue monitoring groundwater semi-annually but as proposed above, we would like to discuss the ineffectiveness of surface water monitoring which no longer reflects IRA monitoring improvements but residual effects following operational pipeline repairs. Amending Section 6.1 of the Completion Report will reset the objective for the surface water at the IRA site to be contained on site as part of operational contingency containment process.

If you require additional information regarding this submittal, please contact Ms. Alicia Voss at (602) 366-8049.

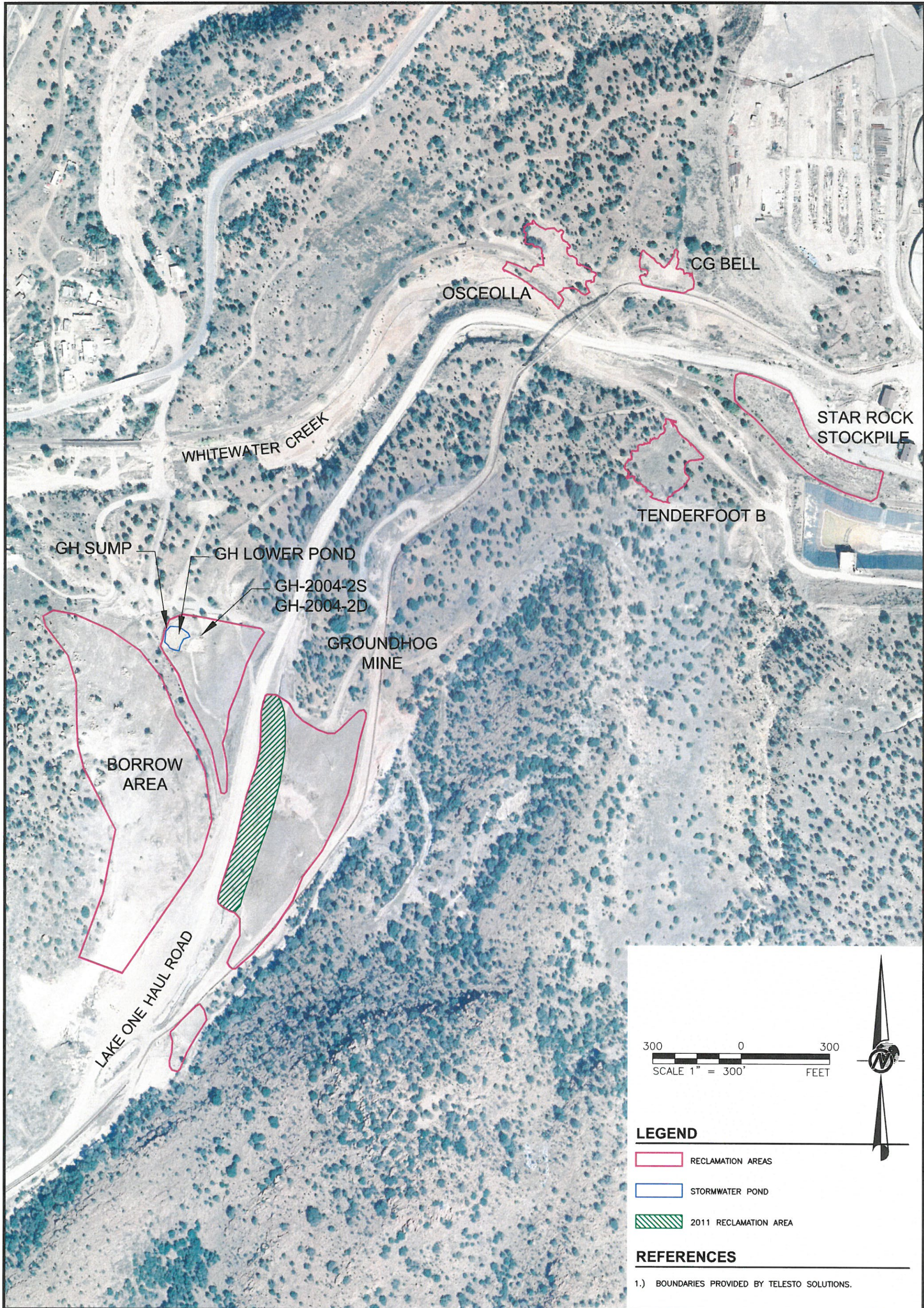
Sincerely,



Sherry Burt-Kested, Manager

SBK:pp
Attachments
20171031-005

xc: David Mercer, NMED (4 copies)
Joseph Fox, NMED (via email)
D.J. Ennis, Mining & Minerals Division, NMEMNRD (via email)
Petra Sanchez, Environmental Protection Agency (via email)
Christian Krueger, Chino (via email)
Lynn Lande, Chino (via email)



LEGEND

- RECLAMATION AREAS
- STORMWATER POND
- 2011 RECLAMATION AREA


REFERENCES


- 1.) BOUNDARIES PROVIDED BY TELESTO SOLUTIONS.

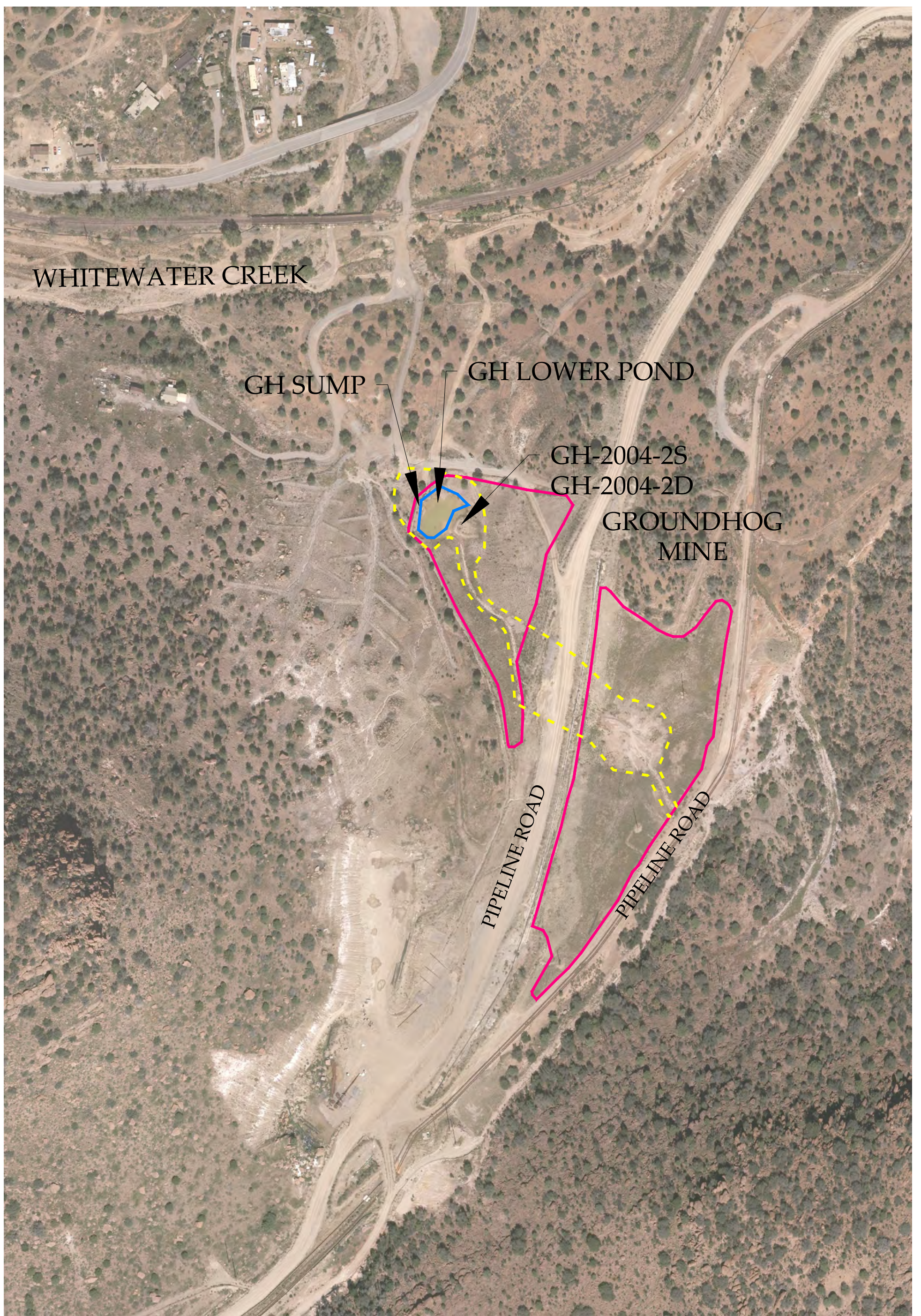
FIGURE 1

PROJECT No.	141-1160
FILE No.	Figure01.dwg
REV. 0	SCALE AS SHOWN
DESIGN	DR 10/28/10
CADD	CM 10/20/14
CHECK	EC 10/20/14
REVIEW	DR 10/20/14

TITLE
**ANNUAL MONITORING OF INTERIM
 REMEDIAL ACTION SITES
 LOCATION MAP**

PROJECT

 CHINO MINES COMPANY
 GROUNDHOG MINE AND SMALL
 HISTORIC STOCKPILES IRA'S
 GRANT COUNTY, NEW MEXICO


 Albuquerque, NM



Legend

- - - - Proposed Operations Area/Pipeline Spill Containment System
- Reclaimed Area
- Pond



Figure 2

Scale: As Noted	Date: 10-31-2017	Notes:
Dept: Environmental Services		
Drawn By: SMG	Checked By: PDP	



Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino Routine
Work Order: **X7F0091**
Reported: 22-Jun-17 13:39

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
347288 / GH-2004-2D	X7F0091-01	Water	01-Jun-17 09:30	LS	06-Jun-2017	
347289 / GH-2004-2S	X7F0091-02	Water	01-Jun-17 10:06	LS	06-Jun-2017	

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
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Project Name: Chino Routine
Work Order: **X7F0091**
Reported: 22-Jun-17 13:39

Client Sample ID: **347288 : GH-2004-2D**
SVL Sample ID: **X7F0091-01 (Water)**

Sampled: 01-Jun-17 09:30
Received: 06-Jun-17
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0151	mg/L	0.0020	0.0009		X723123	AS	06/20/17 11:13	
EPA 200.7	Calcium	498	mg/L	0.100	0.041		X723123	AS	06/20/17 11:13	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X723123	AS	06/20/17 11:13	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0026		X723123	AS	06/20/17 11:13	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X723123	AS	06/20/17 11:13	
EPA 200.7	Lead	0.0089	mg/L	0.0075	0.0030		X723123	AS	06/20/17 11:13	
EPA 200.7	Magnesium	118	mg/L	0.20	0.08		X723123	AS	06/20/17 11:13	
EPA 200.7	Manganese	0.0484	mg/L	0.0080	0.0049		X723123	AS	06/20/17 11:13	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0027		X723123	AS	06/20/17 11:13	
EPA 200.7	Zinc	0.889	mg/L	0.010	0.003		X723123	AS	06/20/17 11:13	
EPA 200.8	Uranium	0.00357	mg/L	0.00100	0.000025		X723118	KWH	06/22/17 11:41	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	2540	mg/L	40			X723144	JDM	06/07/17 15:15	D2
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Anions by Ion Chromatography

EPA 300.0	Fluoride	0.577	mg/L	0.100	0.031		X723207	SMB	06/16/17 14:07	
EPA 300.0	Sulfate as SO4	1690	mg/L	15.0	6.00	50	X723207	SMB	06/16/17 14:22	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino Routine
Work Order: **X7F0091**
Reported: 22-Jun-17 13:39

Client Sample ID: **347289 : GH-2004-2S**
SVL Sample ID: **X7F0091-02 (Water)**

Sampled: 01-Jun-17 10:06
Received: 06-Jun-17
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.338	mg/L	0.0020	0.0009		X723123	AS	06/20/17 11:16	
EPA 200.7	Calcium	535	mg/L	0.100	0.041		X723123	AS	06/20/17 11:16	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X723123	AS	06/20/17 11:16	
EPA 200.7	Copper	0.0189	mg/L	0.0100	0.0026		X723123	AS	06/20/17 11:16	
EPA 200.7	Iron	0.155	mg/L	0.100	0.045		X723123	AS	06/20/17 11:16	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0030		X723123	AS	06/20/17 11:16	
EPA 200.7	Magnesium	195	mg/L	0.20	0.08		X723123	AS	06/20/17 11:16	
EPA 200.7	Manganese	30.3	mg/L	0.0080	0.0049		X723123	AS	06/20/17 11:16	
EPA 200.7	Nickel	0.0646	mg/L	0.0100	0.0027		X723123	AS	06/20/17 11:16	
EPA 200.7	Zinc	74.5	mg/L	0.100	0.028	10	X723123	AS	06/20/17 13:51	D2
EPA 200.8	Uranium	0.00116	mg/L	0.00100	0.000025		X723118	KWH	06/22/17 11:47	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	3320	mg/L	40			X723144	JDM	06/07/17 15:15	D2
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Anions by Ion Chromatography

EPA 300.0	Fluoride	1.85	mg/L	0.100	0.031		X723207	SMB	06/16/17 15:09	
EPA 300.0	Sulfate as SO4	2400	mg/L	15.0	6.00	50	X723207	SMB	06/16/17 15:24	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Freeport McMoRan - Chino Mines
 PO Box 10
 Bayard, NM 88023

Project Name: Chino Routine
 Work Order: **X7F0091**
 Reported: 22-Jun-17 13:39

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Dissolved)								
EPA 200.7	Cadmium	mg/L	<0.0020	0.0009	0.0020	X723123	20-Jun-17	
EPA 200.7	Calcium	mg/L	<0.100	0.041	0.100	X723123	20-Jun-17	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0013	0.0060	X723123	20-Jun-17	
EPA 200.7	Copper	mg/L	<0.0100	0.0026	0.0100	X723123	20-Jun-17	
EPA 200.7	Iron	mg/L	<0.100	0.045	0.100	X723123	20-Jun-17	
EPA 200.7	Lead	mg/L	<0.0075	0.0030	0.0075	X723123	20-Jun-17	
EPA 200.7	Magnesium	mg/L	<0.20	0.08	0.20	X723123	20-Jun-17	
EPA 200.7	Manganese	mg/L	<0.0080	0.0049	0.0080	X723123	20-Jun-17	
EPA 200.7	Nickel	mg/L	<0.0100	0.0027	0.0100	X723123	20-Jun-17	
EPA 200.7	Zinc	mg/L	<0.010	0.003	0.010	X723123	20-Jun-17	
EPA 200.8	Uranium	mg/L	<0.00100	0.000025	0.00100	X723118	22-Jun-17	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	<10		10	X723144	07-Jun-17	
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Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.031	0.100	X723207	16-Jun-17	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.12	0.30	X723207	16-Jun-17	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)									
EPA 200.7	Cadmium	mg/L	0.992	1.00	99.2	85 - 115	X723123	20-Jun-17	
EPA 200.7	Calcium	mg/L	18.8	20.0	94.2	85 - 115	X723123	20-Jun-17	
EPA 200.7	Cobalt	mg/L	0.976	1.00	97.6	85 - 115	X723123	20-Jun-17	
EPA 200.7	Copper	mg/L	0.990	1.00	99.0	85 - 115	X723123	20-Jun-17	
EPA 200.7	Iron	mg/L	9.51	10.0	95.1	85 - 115	X723123	20-Jun-17	
EPA 200.7	Lead	mg/L	0.984	1.00	98.4	85 - 115	X723123	20-Jun-17	
EPA 200.7	Magnesium	mg/L	19.4	20.0	97.0	85 - 115	X723123	20-Jun-17	
EPA 200.7	Manganese	mg/L	0.994	1.00	99.4	85 - 115	X723123	20-Jun-17	
EPA 200.7	Nickel	mg/L	0.988	1.00	98.8	85 - 115	X723123	20-Jun-17	
EPA 200.7	Zinc	mg/L	0.996	1.00	99.6	85 - 115	X723123	20-Jun-17	
EPA 200.8	Uranium	mg/L	0.0248	0.0250	99.2	85 - 115	X723118	22-Jun-17	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.13	2.00	107	90 - 110	X723207	16-Jun-17	
EPA 300.0	Sulfate as SO4	mg/L	10.2	10.0	102	90 - 110	X723207	16-Jun-17	



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Project Name: Chino Routine
 Work Order: **X7F0091**
 Reported: 22-Jun-17 13:39

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	385	376	2.4	10	X723144	07-Jun-17	
SM 2540 C	Total Diss. Solids	mg/L	784	780	0.5	10	X723144	07-Jun-17	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Dissolved)

EPA 200.7	Cadmium	mg/L	1.01	<0.0020	1.00	101	70 - 130	X723123	20-Jun-17	
EPA 200.7	Cadmium	mg/L	1.33	0.374	1.00	95.8	70 - 130	X723123	20-Jun-17	
EPA 200.7	Calcium	mg/L	320	302	20.0	91.0	70 - 130	X723123	20-Jun-17	
EPA 200.7	Calcium	mg/L	60.5	44.4	20.0	80.6	70 - 130	X723123	20-Jun-17	
EPA 200.7	Cobalt	mg/L	0.955	<0.0060	1.00	95.5	70 - 130	X723123	20-Jun-17	
EPA 200.7	Cobalt	mg/L	1.63	0.725	1.00	91.0	70 - 130	X723123	20-Jun-17	
EPA 200.7	Copper	mg/L	0.991	<0.0100	1.00	98.7	70 - 130	X723123	20-Jun-17	
EPA 200.7	Copper	mg/L	9.69	8.76	1.00	93.0	70 - 130	X723123	20-Jun-17	
EPA 200.7	Iron	mg/L	9.98	0.338	10.0	96.4	70 - 130	X723123	20-Jun-17	
EPA 200.7	Iron	mg/L	11.5	3.21	10.0	82.9	70 - 130	X723123	20-Jun-17	
EPA 200.7	Lead	mg/L	0.951	<0.0075	1.00	94.8	70 - 130	X723123	20-Jun-17	
EPA 200.7	Lead	mg/L	0.920	<0.0075	1.00	91.7	70 - 130	X723123	20-Jun-17	
EPA 200.7	Magnesium	mg/L	78.3	59.5	20.0	93.9	70 - 130	X723123	20-Jun-17	
EPA 200.7	Magnesium	mg/L	106	89.3	20.0	81.3	70 - 130	X723123	20-Jun-17	
EPA 200.7	Manganese	mg/L	2.04	1.08	1.00	95.6	70 - 130	X723123	20-Jun-17	
EPA 200.7	Manganese	mg/L	44.0	43.3	1.00	R > 4S	70 - 130	X723123	20-Jun-17	M3
EPA 200.7	Nickel	mg/L	0.958	<0.0100	1.00	95.8	70 - 130	X723123	20-Jun-17	
EPA 200.7	Nickel	mg/L	1.13	0.198	1.00	92.8	70 - 130	X723123	20-Jun-17	
EPA 200.7	Zinc	mg/L	0.963	<0.010	1.00	96.0	70 - 130	X723123	20-Jun-17	
EPA 200.7	Zinc	mg/L	55.1	51.9	1.00	R > 4S	70 - 130	X723123	20-Jun-17	D2,M3
EPA 200.8	Uranium	mg/L	0.0282	0.00357	0.0250	98.7	70 - 130	X723118	22-Jun-17	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.45	0.419	2.00	101	90 - 110	X723207	16-Jun-17	
EPA 300.0	Fluoride	mg/L	2.02	0.241	2.00	89.2	90 - 110	X723207	16-Jun-17	M2
EPA 300.0	Sulfate as SO4	mg/L	185	175	10.0	110	90 - 110	X723207	16-Jun-17	D2
EPA 300.0	Sulfate as SO4	mg/L	515	514	10.0	R > 4S	90 - 110	X723207	16-Jun-17	D2,M3

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Dissolved)

EPA 200.7	Cadmium	mg/L	0.992	1.01	1.00	99.2	1.8	20	X723123	20-Jun-17	
EPA 200.7	Calcium	mg/L	319	320	20.0	84.7	0.4	20	X723123	20-Jun-17	
EPA 200.7	Cobalt	mg/L	0.936	0.955	1.00	93.6	2.0	20	X723123	20-Jun-17	
EPA 200.7	Copper	mg/L	0.971	0.991	1.00	96.7	2.1	20	X723123	20-Jun-17	
EPA 200.7	Iron	mg/L	9.97	9.98	10.0	96.3	0.1	20	X723123	20-Jun-17	
EPA 200.7	Lead	mg/L	0.931	0.951	1.00	92.8	2.1	20	X723123	20-Jun-17	
EPA 200.7	Magnesium	mg/L	78.4	78.3	20.0	94.5	0.2	20	X723123	20-Jun-17	
EPA 200.7	Manganese	mg/L	2.02	2.04	1.00	94.0	0.8	20	X723123	20-Jun-17	
EPA 200.7	Nickel	mg/L	0.941	0.958	1.00	94.1	1.9	20	X723123	20-Jun-17	
EPA 200.7	Zinc	mg/L	0.942	0.963	1.00	93.9	2.2	20	X723123	20-Jun-17	



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Project Name: Chino Routine
 Work Order: **X7F0091**
 Reported: 22-Jun-17 13:39

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Metals (Dissolved) (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
EPA 200.8	Uranium	mg/L	0.0291	0.0282	0.0250	102	3.1	20	X723118	22-Jun-17	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	2.43	2.45	2.00	100	0.9	20	X723207	16-Jun-17	
EPA 300.0	Sulfate as SO4	mg/L	185	185	10.0	107	0.1	20	X723207	16-Jun-17	D2

Notes and Definitions

- D2 Sample required dilution due to high concentration of target analyte.
- 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

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Bell</i>		Weather Conditions: <i>Clear & warm</i>	
Inspector: <i>Steven M. Garcia / Pam Pinson</i>			
Time/Date: <i>12:30 12-20-2016</i>			
Vegetation Conditions: <i>Dry grass & vegetation visible.</i>		Fences/Livestock: <i>None.</i>	
Ditches/Water Control: <i>No visible concerns.</i>		Significant Erosion (Attach Description): <i>None visible.</i>	
Monitoring Stations: <i>None.</i>			
Other Observations: 			

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Osceola <i>Osceola</i>	Weather Conditions: <i>Clear & warm</i>
Inspector: <i>Steven M Garcia / Pam Pinson</i>	
Time/Date: <i>12:40 12-20-2016</i>	
Vegetation Conditions: <i>Some vegetation visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>N/A</i>	Significant Erosion (Attach Description): <i>None Visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Ground Hog</i>	Weather Conditions: <i>Clear Warm</i>
Inspector: <i>Steven M. Garcia/Pam Pinson</i>	
Time/Date: <i>12:55 12-20-2016</i>	
Vegetation Conditions: <i>Plenty of dry grass and other vegetation visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Maintenance required on upper diversion; BMP for San Juan Mtn. Borrow Area.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>tender foot</i>	Weather Conditions: <i>Clear & Warm</i>
Inspector: <i>Steven M. Garcia / Pam Pinson</i>	
Time/Date: <i>1:10 12-20-2016</i>	
Vegetation Conditions: <i>Abundant grass (dry) and various vegetation visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Star</i>	Weather Conditions: <i>Clear & warm</i>
Inspector: <i>Steven M. Garcia / Pam Pierson</i>	
Time/Date: <i>1:25 12-20-2016</i>	
Vegetation Conditions: <i>Abundant dry grasses and other vegetation visible through out site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Abundant</i> <i>No visible concern</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Croft Court Rail Road</i>	Weather Conditions: <i>Partly Cloudy</i>
Inspector: <i>Steve Gracia / Pam Pinson</i>	
Time/Date: <i>2:00 PM 12-8-2016</i>	
Vegetation Conditions: <i>Abundant dry grass and other plants, shrubs visible</i>	Fences/Livestock: <i>Fence down</i>
Ditches/Water Control: <i>berm on west side of road along fence washed out in a few places.</i>	Significant Erosion (Attach Description): <i>None Noted</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>East Razer back</i>	Weather Conditions: <i>sunny clear</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>11:00 AM 12-14-2016</i>	
Vegetation Conditions: <i>Shrubs, Trees, and dry grasses and other dry plants visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>For three gravel beams on old road road blown out</i>	Significant Erosion (Attach Description): <i>several areas of significant erosion noted from heavy rains at the beginning of November 2016</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Coyote on site at time of inspection. lots of signs of various wildlife visible throughout site. NOTE: ATV track visible on old haul road and on vegetated area</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Ground Holes</i>	Weather Conditions: <i>Mostly clear & windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:15 3-31-2017</i>	
Vegetation Conditions: <i>Only grass visible throughout site Along with some new growth.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concern</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Access road through upper portion of site in place from spill clean up activities.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Bell</i>	Weather Conditions: <i>Mostly Clear, clear and Windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>9:10 AM 3-31-2017</i>	
Vegetation Conditions: <i>Dry grass and shrubs visible, scattered throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Oceola</i>	Weather Conditions: <i>Mostly Clear, windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>9:20 AM 3-31-2017</i>	
Vegetation Conditions: <i>OAK scrub bushes and some dry grass visible</i>	Fences/Livestock: <i>None</i>
Ditches/Water Control: <i>No visible concern</i>	Significant Erosion (Attach Description): <i>None noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>STAR</i>	Weather Conditions: <i>Mostly Clear & windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>9:30 AM 3-31-2017</i>	
Vegetation Conditions: <i>New green growth visible through out site along with dry grass & shrubs.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Tender Foot</i>	Weather Conditions: <i>Mostly Clear & Windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>9:40 3-31-2017</i>	
Vegetation Conditions: <i>DRY GRASS & shrubs along with New green growth visible through out site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Some minor rills noted on rock water bars on borrow area above site.</i>	Significant Erosion (Attach Description): <i>Some minor pilling on East end of remediated borrow area</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>East Razor back</i>	Weather Conditions: <i>Cloudy, Cold & Windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>11:00 am 2-28-2017</i>	
Vegetation Conditions: <i>Abundant dry grass & shrubs visible throughout. Some new growth visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Some water bars washed out from previous heavy rains in past months.</i>	Significant Erosion (Attach Description): <i>Several areas of significant erosion noted from heavy rains last year. Being evaluated.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Golf Course Rail Road Area</i>	Weather Conditions: <i>Clear, warm</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:20 3-9-2017</i>	
Vegetation Conditions: <i>Abundant dry grass visible throughout site, along with other vegetation</i>	Fences/Livestock: <i>Fence, west side of tracks in need of rebuild. down through most of its length</i>
Ditches/Water Control: <i>Some washout visible on road west of tracks.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	



Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>East Razorback</i>	Weather Conditions: <i>Partly Cloudy and Hot</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:50 AM 6-23-2017</i>	
Vegetation Conditions: <i>Lots of green vegetation visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Gravel berms at toe of site have been re-established</i>	Significant Erosion (Attach Description): <i>rills visible throughout site. Some are significant and are being monitored.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Golf Course Rail Road Area</i>	Weather Conditions: <i>Partly Cloudy Hot</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>11:30 AM 6-23-2017</i>	
Vegetation Conditions: <i>Green vegetation and dry grass visible through outside.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Bell</i>	Weather Conditions: <i>Clear WARM; breeze</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:55 6-28-2007</i>	
Vegetation Conditions: <i>Spotty New growth visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>tender Foot</i>	Weather Conditions: <i>Clear warm & Breezy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>11:10 6-28-2007</i>	
Vegetation Conditions: <i>Abundant stems growth Visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Star</i>	Weather Conditions: <i>warm & clear & breezy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>8:30^{am} 6-29-2007</i>	
Vegetation Conditions: <i>Abundant green plant growth visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Drilling contractor staged in area above slope of star site</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

- Monthly
- Quarterly
- 1" Rain Event

Reclamation Unit: <i>Osceola</i>	Weather Conditions: <i>warm, clear & breezy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>8:45 AM 8-29-2017</i>	
Vegetation Conditions: <i>Spots of green vegetation visible along with dry grass.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

- Monthly
- Quarterly
- 1" Rain Event

Reclamation Unit: <i>Groundhog</i>	Weather Conditions: <i>Clean, warm & breezy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>9:00am 6-29-2007</i>	
Vegetation Conditions: <i>Green vegetation, grass along with dry grass visible through out site. Spots of green vegetation visible on clean up access roads in Area East of main road.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations:	
Other Observations:	

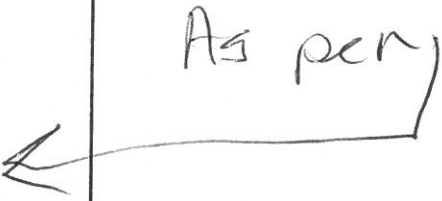
Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Groundhog Mine site ERA		Weather Conditions: Sunny & Clear	
Inspector: Pam P. Inman			
Time/Date: 10:20am 9-21-17			
Vegetation Conditions: Good vegetation both sides of Lake 1 road; except where there was operational removal of tailing spill.		Fences/Livestock: N/A	
Ditches/Water Control: Everything stable		Significant Erosion (Attach Description): None	
Monitoring Stations: N/A			
Other Observations: Drainages good. David Mercer-NMEO participated in site inspection.			

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Tenderfoot	Weather Conditions: Sunny & Clear
Inspector: Pam Pinson	
Time/Date: 11:00 am 9-21-17	
Vegetation Conditions: Excellent vegetation	Fences/Livestock: NA
Ditches/Water Control: Doing really well Site stabilized	Significant Erosion (Attach Description): As per 
Monitoring Stations: NA	
Other Observations: David Mercer, NMEB, participated in inspection	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Star	Weather Conditions: Sunny and Clear
Inspector: 11:15am Pam Pearson	
Time/Date: 11:15am 9-21-17	
Vegetation Conditions: Good shrubs and grasses	Fences/Livestock: NA
Ditches/Water Control: NA	Significant Erosion (Attach Description): NO ISSUES
Monitoring Stations: NA	
Other Observations: David Mercer ^{NMED} participated in inspection	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Osceola	Weather Conditions: Sunny & Clear
Inspector: Pam Pinson	
Time/Date: 11:20am 9-21-17	
Vegetation Conditions: Shrubs & grasses are increasing cover at site on steeper slopes. Flat area by RR doing well	Fences/Livestock: NA
Ditches/Water Control: (road) None	Significant Erosion (Attach Description): stable
Monitoring Stations: NA	
Other Observations: David Mercer NMER, participated in inspection.	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: CB Bell	Weather Conditions: Sunny, warm clear skies
Inspector: Pam Pinson	
Time/Date: 11:30am 9-21-17	
Vegetation Conditions: Shrubs taking hold on steep slopes & increasing in cover	Fences/Livestock: NA
Ditches/Water Control: No issues	Significant Erosion (Attach Description): No issues
Monitoring Stations: NA	
Other Observations: David Mercer, NMED, participated in the inspection.	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: East Slope Razorback IRA	Weather Conditions: Sunny, Clear, & warm
Inspector: Pam Pinson	
Time/Date: 12:10pm 9-21-17	
Vegetation Conditions: Good grass establish-ment & shrubs.	Fences/Livestock: NA
Ditches/Water Control: Stabilizing	Significant Erosion (Attach Description): Site erosion has really stabilized & healed runoff cuts on slopes. Looks good
Monitoring Stations: NA	
Other Observations: David Mercer, NMED, participated in the inspection.	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Golf Course RR IRA Area		Weather Conditions: Windy, overcast	
Inspector: Pam Pinson			
Time/Date: 2:30 pm 7-27-17			
Vegetation Conditions: Good grasses & shrubs		Fences/Livestock: NA	
Ditches/Water Control: BMP's on west side of tracks need reset.		Significant Erosion (Attach Description): Not an issue across IRA areas.	
Monitoring Stations: NA			
Other Observations: 5 yr quantitative survey will be performed for IRA Area in October or as early as late Sept.			



Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino Routine
Work Order: **X710394**
Reported: 30-Sep-17 15:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
349336 / GH-2004-2D	X710394-01	Water	12-Sep-17 12:33	LS	15-Sep-2017	
349337 / GH-2004-2S	X710394-02	Water	12-Sep-17 13:12	LS	15-Sep-2017	
349338 / GH-LOWER POND	X710394-03	Water	12-Sep-17 13:30	LS	15-Sep-2017	
349339 / GH-SUMP	X710394-04	Water	12-Sep-17 13:55	LS	15-Sep-2017	

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 Routine
Work Order: **X710394**
Reported: 30-Sep-17 15:16

Client Sample ID: **349336 : GH-2004-2D**
SVL Sample ID: **X710394-01 (Water)**

Sampled: 12-Sep-17 12:33
Received: 15-Sep-17
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0151	mg/L	0.0020	0.0008		X738031	AS	09/28/17 12:04	
EPA 200.7	Calcium	522	mg/L	0.100	0.040		X738031	AS	09/28/17 12:04	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X738031	AS	09/28/17 12:04	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0023		X738031	AS	09/28/17 12:04	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X738031	AS	09/28/17 12:04	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0052		X738031	AS	09/28/17 12:04	
EPA 200.7	Magnesium	127	mg/L	0.20	0.10		X738031	AS	09/28/17 12:04	
EPA 200.7	Manganese	0.0829	mg/L	0.0080	0.0049		X738031	AS	09/28/17 12:04	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0027		X738031	AS	09/28/17 12:04	
EPA 200.7	Zinc	0.866	mg/L	0.010	0.003		X738031	AS	09/28/17 12:04	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	2500	mg/L	40			X738087	JDM	09/19/17 14:00	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.185	mg/L	0.100	0.034		X738141	SMB	09/30/17 02:11	
EPA 300.0	Sulfate as SO4	44.0	mg/L	0.30	0.13		X738141	SMB	09/30/17 02:11	D2

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 Routine
Work Order: **X710394**
Reported: 30-Sep-17 15:16

Client Sample ID: **349337 : GH-2004-2S**
SVL Sample ID: **X710394-02 (Water)**

Sampled: 12-Sep-17 13:12
Received: 15-Sep-17
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.330	mg/L	0.0020	0.0008		X738031	AS	09/28/17 12:37	
EPA 200.7	Calcium	512	mg/L	0.100	0.040		X738031	AS	09/29/17 07:41	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X738031	AS	09/28/17 12:37	
EPA 200.7	Copper	0.0155	mg/L	0.0100	0.0023		X738031	AS	09/28/17 12:37	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X738031	AS	09/28/17 12:37	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0052		X738031	AS	09/28/17 12:37	
EPA 200.7	Magnesium	201	mg/L	0.20	0.10		X738031	AS	09/28/17 12:37	
EPA 200.7	Manganese	31.4	mg/L	0.0080	0.0049		X738031	AS	09/28/17 12:37	
EPA 200.7	Nickel	0.0594	mg/L	0.0100	0.0027		X738031	AS	09/28/17 12:37	
EPA 200.7	Zinc	69.1	mg/L	0.100	0.031	10	X738031	AS	09/29/17 08:59	D2
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3350	mg/L	40			X738087	JDM	09/19/17 14:00	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.996	mg/L	0.100	0.034		X738141	SMB	09/30/17 02:42	
EPA 300.0	Sulfate as SO4	2220	mg/L	15.0	6.50	50	X738141	SMB	09/30/17 02:57	D2

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 Routine
Work Order: **X710394**
Reported: 30-Sep-17 15:16

Client Sample ID: **349338 : GH-LOWER POND**
SVL Sample ID: **X710394-03 (Water)**

Sampled: 12-Sep-17 13:30
Received: 15-Sep-17
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0008		X738031	AS	09/28/17 12:40	
EPA 200.7	Calcium	109	mg/L	0.100	0.040		X738031	AS	09/29/17 07:44	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X738031	AS	09/28/17 12:40	
EPA 200.7	Copper	0.0137	mg/L	0.0100	0.0023		X738031	AS	09/28/17 12:40	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X738031	AS	09/28/17 12:40	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0052		X738031	AS	09/28/17 12:40	
EPA 200.7	Magnesium	17.4	mg/L	0.20	0.10		X738031	AS	09/28/17 12:40	
EPA 200.7	Manganese	0.144	mg/L	0.0080	0.0049		X738031	AS	09/28/17 12:40	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0027		X738031	AS	09/28/17 12:40	
EPA 200.7	Zinc	0.056	mg/L	0.010	0.003		X738031	AS	09/28/17 12:40	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	507	mg/L	10			X738087	JDM	09/19/17 14:00	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.621	mg/L	0.100	0.034		X738141	SMB	09/30/17 03:44	
EPA 300.0	Sulfate as SO4	339	mg/L	3.00	1.30	10	X738141	SMB	09/30/17 03:59	D2

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 Routine
Work Order: **X710394**
Reported: 30-Sep-17 15:16

Client Sample ID: **349339 : GH-SUMP**
SVL Sample ID: **X710394-04 (Water)**

Sampled: 12-Sep-17 13:55
Received: 15-Sep-17
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0039	mg/L	0.0020	0.0008		X738031	AS	09/28/17 12:44	
EPA 200.7	Calcium	107	mg/L	0.100	0.040		X738031	AS	09/29/17 07:48	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X738031	AS	09/28/17 12:44	
EPA 200.7	Copper	0.0134	mg/L	0.0100	0.0023		X738031	AS	09/28/17 12:44	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X738031	AS	09/28/17 12:44	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0052		X738031	AS	09/28/17 12:44	
EPA 200.7	Magnesium	18.9	mg/L	0.20	0.10		X738031	AS	09/28/17 12:44	
EPA 200.7	Manganese	0.316	mg/L	0.0080	0.0049		X738031	AS	09/28/17 12:44	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0027		X738031	AS	09/28/17 12:44	
EPA 200.7	Zinc	0.834	mg/L	0.010	0.003		X738031	AS	09/28/17 12:44	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	552	mg/L	40			X738087	JDM	09/19/17 14:00	D1
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.697	mg/L	0.100	0.034		X738141	SMB	09/30/17 04:15	
EPA 300.0	Sulfate as SO4	348	mg/L	3.00	1.30	10	X738141	SMB	09/30/17 04:30	D2

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 Routine
 Work Order: **X710394**
 Reported: 30-Sep-17 15:16

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Dissolved)

EPA 200.7	Cadmium	mg/L	<0.0020	0.0008	0.0020	X738031	28-Sep-17	
EPA 200.7	Calcium	mg/L	<0.100	0.040	0.100	X738031	28-Sep-17	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0013	0.0060	X738031	28-Sep-17	
EPA 200.7	Copper	mg/L	<0.0100	0.0023	0.0100	X738031	28-Sep-17	
EPA 200.7	Iron	mg/L	<0.100	0.045	0.100	X738031	28-Sep-17	
EPA 200.7	Lead	mg/L	<0.0075	0.0052	0.0075	X738031	28-Sep-17	
EPA 200.7	Magnesium	mg/L	<0.20	0.10	0.20	X738031	28-Sep-17	
EPA 200.7	Manganese	mg/L	<0.0080	0.0049	0.0080	X738031	28-Sep-17	
EPA 200.7	Nickel	mg/L	<0.0100	0.0027	0.0100	X738031	28-Sep-17	
EPA 200.7	Zinc	mg/L	<0.010	0.003	0.010	X738031	28-Sep-17	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	<10		10	X738087	19-Sep-17	
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Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.034	0.100	X738141	29-Sep-17	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.13	0.30	X738141	29-Sep-17	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Dissolved)

EPA 200.7	Cadmium	mg/L	1.03	1.00	103	85 - 115	X738031	28-Sep-17	
EPA 200.7	Calcium	mg/L	20.5	20.0	102	85 - 115	X738031	28-Sep-17	
EPA 200.7	Cobalt	mg/L	1.03	1.00	103	85 - 115	X738031	28-Sep-17	
EPA 200.7	Copper	mg/L	1.05	1.00	105	85 - 115	X738031	28-Sep-17	
EPA 200.7	Iron	mg/L	10.2	10.0	102	85 - 115	X738031	28-Sep-17	
EPA 200.7	Lead	mg/L	1.03	1.00	103	85 - 115	X738031	28-Sep-17	
EPA 200.7	Magnesium	mg/L	20.6	20.0	103	85 - 115	X738031	28-Sep-17	
EPA 200.7	Manganese	mg/L	1.07	1.00	107	85 - 115	X738031	28-Sep-17	
EPA 200.7	Nickel	mg/L	1.04	1.00	104	85 - 115	X738031	28-Sep-17	
EPA 200.7	Zinc	mg/L	1.01	1.00	101	85 - 115	X738031	28-Sep-17	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	1.86	2.00	93.0	90 - 110	X738141	29-Sep-17	
EPA 300.0	Sulfate as SO4	mg/L	9.76	10.0	97.6	90 - 110	X738141	29-Sep-17	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	388	392	1.0	10	X738087	19-Sep-17	
SM 2540 C	Total Diss. Solids	mg/L	571	572	0.2	10	X738087	19-Sep-17	



Freeport McMoRan - Chino Mines
 PO Box 10
 Bayard, NM 88023

Project Name: Chino Routine
 Work Order: **X710394**
 Reported: 30-Sep-17 15:16

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	mg/L	1.02	<0.0020	1.00	102	70 - 130	X738031	28-Sep-17	
EPA 200.7	Cadmium	mg/L	1.08	<0.0020	1.00	108	70 - 130	X738031	28-Sep-17	
EPA 200.7	Calcium	mg/L	339	328	20.0	0.30R>S	70 - 130	X738031	28-Sep-17	M3
EPA 200.7	Calcium	mg/L	508	495	20.0	0.30R>S	70 - 130	X738031	29-Sep-17	D2,M3
EPA 200.7	Cobalt	mg/L	0.955	<0.0060	1.00	95.5	70 - 130	X738031	28-Sep-17	
EPA 200.7	Cobalt	mg/L	1.15	0.197	1.00	95.0	70 - 130	X738031	28-Sep-17	
EPA 200.7	Copper	mg/L	1.04	<0.0100	1.00	103	70 - 130	X738031	28-Sep-17	
EPA 200.7	Copper	mg/L	1.02	<0.0100	1.00	102	70 - 130	X738031	28-Sep-17	
EPA 200.7	Iron	mg/L	9.64	<0.100	10.0	96.4	70 - 130	X738031	28-Sep-17	
EPA 200.7	Iron	mg/L	9.88	<0.100	10.0	98.8	70 - 130	X738031	28-Sep-17	
EPA 200.7	Lead	mg/L	0.951	<0.0075	1.00	95.1	70 - 130	X738031	28-Sep-17	
EPA 200.7	Lead	mg/L	0.925	<0.0075	1.00	92.5	70 - 130	X738031	28-Sep-17	
EPA 200.7	Magnesium	mg/L	228	215	20.0	0.30R>S	70 - 130	X738031	28-Sep-17	M3
EPA 200.7	Magnesium	mg/L	613	598	20.0	75.9	70 - 130	X738031	28-Sep-17	
EPA 200.7	Manganese	mg/L	0.988	<0.0080	1.00	98.8	70 - 130	X738031	28-Sep-17	
EPA 200.7	Manganese	mg/L	0.988	<0.0080	1.00	98.2	70 - 130	X738031	28-Sep-17	
EPA 200.7	Nickel	mg/L	0.950	<0.0100	1.00	95.0	70 - 130	X738031	28-Sep-17	
EPA 200.7	Nickel	mg/L	0.987	0.0529	1.00	93.4	70 - 130	X738031	28-Sep-17	
EPA 200.7	Zinc	mg/L	0.930	<0.010	1.00	93.0	70 - 130	X738031	28-Sep-17	
EPA 200.7	Zinc	mg/L	0.945	0.019	1.00	92.5	70 - 130	X738031	28-Sep-17	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.55	0.594	2.00	97.9	90 - 110	X738141	29-Sep-17	
EPA 300.0	Fluoride	mg/L	2.09	0.259	2.00	91.3	90 - 110	X738141	30-Sep-17	
EPA 300.0	Sulfate as SO4	mg/L	114	107	10.0	0.30R>S	90 - 110	X738141	29-Sep-17	D2,M3
EPA 300.0	Sulfate as SO4	mg/L	131	128	10.0	0.30R>S	90 - 110	X738141	30-Sep-17	D2,M3

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Dissolved)											
EPA 200.7	Cadmium	mg/L	1.26	1.02	1.00	126	21.4	20	X738031	28-Sep-17	R5
EPA 200.7	Calcium	mg/L	337	339	20.0	0.30R>S	0.5	20	X738031	28-Sep-17	M3
EPA 200.7	Cobalt	mg/L	1.18	0.955	1.00	118	21.2	20	X738031	28-Sep-17	R5
EPA 200.7	Copper	mg/L	1.25	1.04	1.00	124	18.6	20	X738031	28-Sep-17	
EPA 200.7	Iron	mg/L	9.32	9.64	10.0	93.2	3.4	20	X738031	28-Sep-17	
EPA 200.7	Lead	mg/L	1.18	0.951	1.00	118	21.5	20	X738031	28-Sep-17	R5
EPA 200.7	Magnesium	mg/L	228	228	20.0	0.30R>S	0.3	20	X738031	28-Sep-17	M3
EPA 200.7	Manganese	mg/L	1.20	0.988	1.00	120	19.5	20	X738031	28-Sep-17	
EPA 200.7	Nickel	mg/L	1.18	0.950	1.00	118	21.5	20	X738031	28-Sep-17	R5
EPA 200.7	Zinc	mg/L	1.14	0.930	1.00	114	20.7	20	X738031	28-Sep-17	R5

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.61	2.55	2.00	101	2.4	20	X738141	29-Sep-17	
EPA 300.0	Sulfate as SO4	mg/L	113	114	10.0	0.30R>S	0.8	20	X738141	29-Sep-17	D2,M3



Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino Routine
Work Order: **X710394**
Reported: 30-Sep-17 15:16

Notes and Definitions

D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concentration of target analyte.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable
