



Freeport-McMoRan Chino Mines Company
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October 31, 2016

Certified Mail #70160750000113392557
Return Receipt Requested

Ms. Michelle Hunter, Chief
New Mexico Environment Department
Ground Water Quality Bureau
P. O. Box 5469
Santa Fe, New Mexico 87502

Dear Ms. Hunter:

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, 2016. 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.

- 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;
- The quarterly erosion surveys; and
- A site location figure.

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.

The attached ground water quality data are for monitor wells GH-2004-2S and GH-2004-2D. 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 the headwall. 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 will continue monitoring groundwater and surface water semi-annually for the following suite of analytes: cadmium, calcium, cobalt, copper, fluoride, iron, lead, magnesium, manganese, nickel, lead, zinc, pH, sulfate, and total dissolved solids. This analyte list was requested in a letter dated May 3, 2005 from the NMED.

If you require additional information regarding this submittal please contact Mr. Ned Hall at (520) 393-2292.

Sincerely,



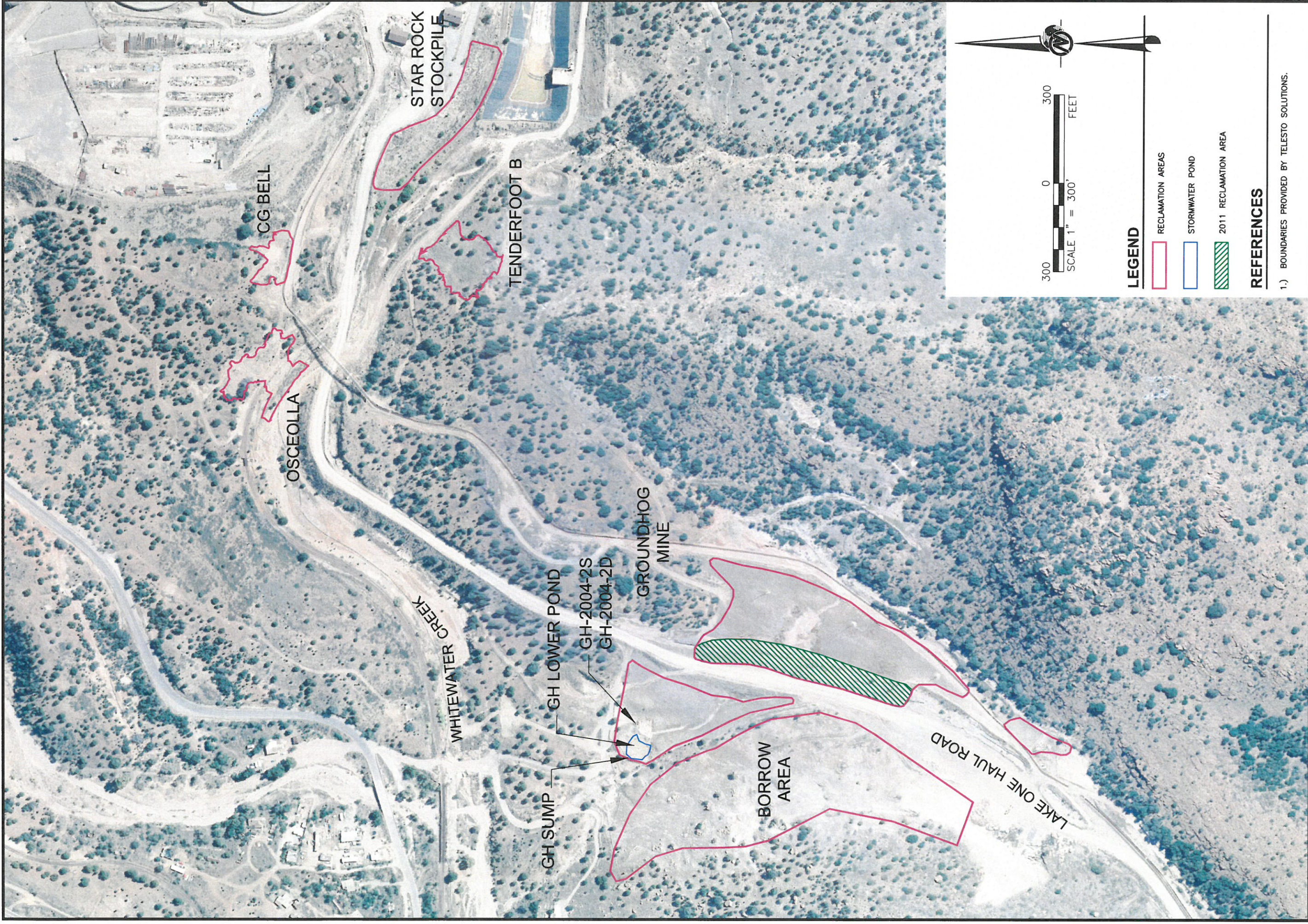
for

Sherry Burt-Kested, Manager

SBK:pp
Attachments
20161031-003

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)

Drawing file: Figure01_102014.dwg Oct 29, 2014 7:48am



LEGEND

- RECLAMATION AREAS
- STORMWATER POND
- 2011 RECLAMATION AREA

REFERENCES

1.) BOUNDARIES PROVIDED BY TELESTO SOLUTIONS.

TITLE

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

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

FIGURE 1

PROJECT



GROUNDHOG MINE AND SMALL
HISTORIC STOCKPILES IRAS
GRANT COUNTY, NEW MEXICO



Freeport-McMoRan Chino Mines Company

Groundhog Mine IRA Annual Report

October 31, 2016

Site Number	Sample ID	Sample Date	Comments	Ca, Diss (mg/L)	Cd, Diss (mg/l)	Co, Diss (mg/l)	Cu, Diss (mg/l)	F, Tot (mg/l)	Fe, Diss (mg/l)	Mg, Diss (mg/L)	Mn, Diss (mg/l)	Ni, Diss (mg/l)	Pb, Diss (mg/l)	Zn, Diss (mg/l)	pH, Field (su)	SO4, Tot (mg/l)	TDS (mg/l)	Cond, Fid (micromho)	Water Temp (Cent)	Well Collar Level (ft msl)	Well Depth (ft)	Depth to Water (ft)
WQCC Water Quality Standard					0.01	0.05	1	1.6	1		0.2	0.2	0.05	10	6-9	600	1000					
GH-2004-2D	235809	10/28/2004		NA	0.0044	<0.006	0.0049	<1	<0.02	NA	0.0591	<0.01	<0.005	0.743	6.63	1780	2580	2292	17.3	6009.7	157.6	62
GH-2004-2D	245863	5/17/2005		NA	0.0027	<0.006	<0.01	<0.5	0.089	NA	0.374	<0.01	<0.005	0.654	6.76	1640	2440	2339	17.4	6003.74	147.6	44.5
GH-2004-2D	270674	10/25/2005		NA	0.0074	<0.006	<0.01	1.03	<0.06	NA	0.213	<0.01	0.009	1.65	6.62	1620	2530	2354	17.4	6003.74	147.6	46.3
GH-2004-2D	276910	3/14/2006		NA	0.0087	<0.006	<0.01	0.2	<0.06	NA	0.129	<0.01	0.009	0.851	6.63	1600	2770	2334	17.2	6003.74	147.6	47.43
GH-2004-2D	283019	8/4/2006		NA	0.0119	<0.006	<0.01	<0.2	<0.06	NA	0.123	<0.01	0.0108	1	6.58	1590	2620	2384	17.6	6003.74	147.6	50.3
GH-2004-2D	299167	2/6/2007		NA	0.0095	<0.006	<0.01	<0.2	<0.06	NA	0.108	<0.01	0.0091	0.903	6.53	1660	2630	2372	17.3	6003.74	147.6	43.03
GH-2004-2D	305946	7/23/2007		NA	0.011	<0.006	<0.01	<0.5	<0.06	NA	0.0899	<0.01	0.011	0.935	6.72	1640	2700	2432	18.1	6003.74	147.6	43.45
GH-2004-2D	316507	3/25/2008		NA	0.0105	<0.006	<0.01	<0.2	<0.06	NA	0.0555	<0.01	0.0086	0.82	6.79	1760	2700	2304	17	6003.74	147.6	44.7
GH-2004-2D	320089	10/28/2008		NA	0.0094	<0.006	<0.01	<0.5	<0.06	NA	0.112	<0.01	0.011	0.866	6.63	1990	2700	2351	17.2	6003.74	147.6	41.42
GH-2004-2D	321236	03/23/2009		NA	0.0072	<0.006	0.015	0.107	<0.06	NA	0.254	<0.01	<0.0075	0.904	6.82	1570	2690	2348	17.2	6003.74	147.6	44.8
GH-2004-2D	322688	09/30/2009		494	0.0101	<0.006	0.016	<0.5	<0.06	121	0.139	<0.01	<0.0075	0.873	6.43	1560	2730	2405	17.8	6003.74	147.6	48.08
GH-2004-2D	323312	03/11/2010		491	0.0116	<0.0061	0.013	<0.2	<0.061	118	0.0689	<0.01	0.008	0.838	6.77	1710	2680	2382	16.9	6003.74	147.6	48.22
GH-2004-2D	324880	09/20/2010		515	0.0117	<0.006	<0.01	<0.5	<0.06	125	0.0606	<0.01	0.0108	0.775	6.81	1660	2760	2422	18.7	6003.74	147.6	44.74
GH-2004-2D	326361	03/02/2011		509	0.0122	<0.006	<0.01	<0.5	<0.06	118	0.0703	<0.01	0.0134	0.855	6.73	1620	2540	2367	17.5	6003.74	147.6	47.99
GH-2004-2D	327872	09/02/2011		489	0.0098	<0.006	0.01	<0.1	<0.06	113	0.0474	<0.01	<0.0075	0.782	6.75	1640	2660	2416	18.9	6003.74	147.6	50.32
GH-2004-2D	329325	03/22/2012		527	0.0118	<0.006	<0.01	<0.5	<0.06	122	0.0626	<0.01	0.0096	0.804	6.63	1750	2710	2272	17.9	6003.74	147.6	45.34
GH-2004-2D	330950	09/06/2012		525	0.0119	<0.006	<0.01	<0.5	<0.06	123	0.0484	<0.01	0.009	0.852	6.72	1800	2640	2467	19.3	6003.74	147.6	49.13
GH-2004-2D	332598	03/11/2013		540	0.0136	<0.006	0.011	<0.5	<0.06	130	0.0496	<0.01	0.0144	0.912	6.69	1780	2720	2389	18	6003.74	147.6	52.56
GH-2004-2D	334321	09/18/2013		541	0.0143	<0.006	<0.01	1.01	<0.06	127	0.0635	<0.01	0.012	0.912	6.69	1780	2720	2428	17.9	6003.74	147.6	50.28
GH-2004-2D	335938	03/06/2014		512	0.0156	<0.006	<0.01	0.96	<0.06	122	0.0932	<0.01	0.0091	0.883	6.63	1720	2570	2361	17.9	6003.74	147.6	47
GH-2004-2D	337693	09/09/2014		521	0.0148	<0.006	<0.01	<0.5	<0.06	124	0.064	<0.01	<0.0075	0.843	6.75	1750	2680	2404	18.3	6003.74	147.6	50.24
GH-2004-2D	339360	03/12/2015		503	0.0119	<0.006	<0.01	<0.5	<0.06	118	0.0436	<0.01	<0.0075	0.801	6.79	1700	2440	2247	16.9	6003.74	147.6	45.65
GH-2004-2D	341186	09/02/2015		489	0.0147	<0.006	<0.01	<0.5	<0.06	112	0.0507	<0.01	<0.0075	0.874	6.71	1730	2580	2396	19.3	6003.74	147.6	49.32
GH-2004-2D	343006	03/03/2016		486	0.0154	<0.006	<0.01	0.732	<0.06	115	0.0539	<0.01	<0.0075	0.956	6.75	1710	2610	2310	18	6003.74	147.6	49.74
GH-2004-2D	345111	09/13/2016		505	0.0146	<0.006	<0.01	<0.1	<0.1	116	0.0276	<0.01	<0.0075	0.79	6.74	1650	2530	2260	17.4	6003.74	147.6	54.09
GH-2004-2S	236057	10/28/2004		NA	0.0153	<0.006	0.007	0.31	<0.02	NA	0.703	<0.01	<0.005	2.15	7.07	1460	2120	2019	17	6009.7	**	53.25
GH-2004-2S	245864	5/17/2005		NA	0.0029	<0.006	0.014	<0.5	<0.06	NA	0.0826	<0.01	<0.005	0.371	7.39	1360	2080	2046	17.4	6003.74	83	46.73
GH-2004-2S	270675	10/25/2005		NA	0.0026	<0.006	<0.01	1.02	<0.06	NA	0.0321	<0.01	<0.0075	0.421	6.99	1390	2160	2152	17.3	6003.74	83	40.16
GH-2004-2S	276911	3/14/2006		NA	0.0027	<0.006	<0.01	0.73	<0.06	NA	0.0216	<0.01	<0.008	0.291	7.26	1410	2240	2204	17.1	6003.74	83	40.64
GH-2004-2S	283020	8/4/2006		NA	0.0027	<0.006	<0.01	<0.2	<0.06	NA	0.011	<0.01	<0.0075	0.359	7.27	1390	2240	2203	17.8	6003.74	83	43.84
GH-2004-2S	299168	2/6/2007		NA	0.0031	0.01	0.111	1.16	<0.06	NA	0.564	<0.01	<0.0075	0.557	6.53	1410	2220	2142	17.4	6003.74	83	37.08
GH-2004-2S	305947	7/23/2007		NA	<0.002	<0.006	<0.01	<0.5	<0.06	NA	<0.004	<0.01	<0.008	0.226	7.03	1440	2300	2279	17.7	6003.74	83	36.89
GH-2004-2S	316508	3/25/2008		NA	0.0052	<0.006	0.065	<0.5	0.092	NA	0.389	<0.01	<0.0075	1.36	7.23	1970	3000	2648	16.3	6003.74	83	37.75
GH-2004-2S	320090	10/28/2008		NA	0.0022	<0.006	0.011	<0.5	<0.06	NA	0.0547	<0.01	<0.0075	0.318	7.07	1870	2900	2650	17.8	6003.74	83	59.59
GH-2004-2S	321237	03/23/2009		NA	0.0068	<0.006	0.051	<0.1	<0.06	NA	0.916	<0.01	<0.0075	1.63	7.02	1720	2810	2554	16.9	6003.74	83	37.27
GH-2004-2S	322689	09/30/2009		468	0.0286	<0.006	0.072	0.995	<0.06	137	3.42	0.031	<0.0075	5.91	6.73	1850	3170	2845	17.3	6003.74	83	39.47
GH-2004-2S	323313	03/11/2010		539	0.0906	0.0114	0.768	1.48	<0.061	172	12	0.026	<0.0076	21	6.62	2520	3620	2639	15.7	6003.74	83	40.25
GH-2004-2S	324881	09/20/2010		619	0.115	<0.006	0.019	<1	<0.06	200	6.43	0.036	<0.0075	21.5	6.69	2450	3820	3318	18.2	6003.74	83	37.33
GH-2004-2S	326362	03/02/2011		563	0.111	<0.006	0.012	0.858	<0.06	181	5.52	0.036	<0.0075	23	6.6	2220	3550	3102	17.1	6003.74	83	42.2
GH-2004-2S	327873	09/02/2011		527	0.0748	<0.006	0.032	<0.5	<0.06	167	1.13	0.016	<0.0075	18	6.65	2150	3380	3023	18.8	6003.74	83	42.57
GH-2004-2S	329326	03/22/2012		599	0.203	<0.006	0.012	1.1	<0.06	197	10.7	0.036	0.0133	42.2	6.53	2490	3610	3042	17.9	6003.74	83	37.75
GH-2004-2S	330951	09/06/2012		585	0.171	<0.006	<0.01	1.34	<0.06	197	10	0.03	<0.0075	36.9	6.65	2500	3580	3111	18.6	6003.74	83	41.17
GH-2004-2S	332599	03/11/2013		567	0.157	<0.006	<0.01	1.81	<0.06	192	4.52	0.03	<0.0075	36.9	6.5	2330	3360	2846	18.3	6003.74	83	45.27
GH-2004-2S	334322	09/18/2013		430	0.133	<0.006	0.015	1.43	<0.06	152	4.03	0.025	<0.0075	31	6.6	2010	2980	2635	18.7	6003.74	83	41.56
GH-2004-2S	335939	03/06/2014		570	0.296	<0.006	<0.01	1.59	<0.06	208	27.3	0.056	<0.0075	59.8	6.58	2680	3470	3095	18.3	6003.74	83	38.95
GH-2004-2S	337694	09/09/2014		556	0.227	<0.006	<0.01	1.73	<0.06	198	13.4	0.043	<									

Freeport-McMoRan Chino Mines Company Groundhog Mine IRA Annual Report October 31, 2016

Site Number	Sample ID	Sample Date	Comments	Ca, Diss (mg/L)	Cd, Diss (mg/l)	Co, Diss (mg/l)	Cu, Diss (mg/l)	F, Tot (mg/l)	Fe, Diss (mg/l)	Mg, Diss (mg/L)	Mn, Diss (mg/l)	Ni, Diss (mg/l)	Pb, Diss (mg/l)	Zn, Diss (mg/l)	pH, Field (su)	SO4, Tot (mg/l)	TDS (mg/l)	Cond, Fid (micromho)	Water Temp (Cent)	Well Collar Level (ft msl)	Well Depth (ft)	Depth to Water (ft)	
WQCC Water Quality Standard																							
GH-Sump ¹	329328	03/22/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	330953	09/06/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	332601	03/11/2013	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	334167	08/05/2013		119	0.0046	<0.006	0.027	0.98	<0.06	17.7	0.0281	<0.01	<0.0075	0.737	6.82	379	570	758	24.2	surface	surface	surface	
GH-Sump ¹	334324	09/18/2013		155	0.0069	<0.006	0.031	1.06	<0.06	24.6	0.203	<0.01	<0.0075	0.907	6.83	409	699	837	20.6	surface	surface	surface	
GH-Sump ¹	335941	03/06/2014	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	337696	09/09/2014		162	0.0029	<0.006	0.019	1.04	<0.06	23.8	<0.004	<0.01	<0.0075	0.461	7.06	475	748	906	21.4	surface	surface	surface	
GH-Sump ¹	339363	03/12/2015		310	0.0274	<0.006	0.407	0.828	<0.06	48.3	0.0865	<0.01	<0.0075	7.91	6.66	912	1,370	1,245	14.4	surface	surface	surface	
GH-Sump ¹	341189	09/01/2015		130	0.0082	<0.006	0.126	1.27	0.559	21.5	0.235	<0.01	0.0854	1.51	6.8	419	653	851	24.7	surface	surface	surface	
GH-Sump ¹	343009	03/04/2016		186	0.0065	<0.006	0.02	0.928	<0.06	29.2	<0.004	<0.01	<0.0075	1.54	7.17	554	884	849	12.2	surface	surface	surface	
GH-Sump ¹	345114	09/14/2016		159	0.0046	<0.006	0.0279	0.639	<0.1	23.4	0.0197	<0.01	<0.0075	0.72	7.04	404	691	809	21.5	surface	surface	surface	
Lower GH-Sump Pond ¹		3/14/2006		NA	0.701	0.284	20.2	5.34	<0.06	NA	116	0.184	0.16	232	4.88	3160	5100	3293	13.1	surface	surface	surface	
Lower GH-Sump Pond ¹	299169	2/6/2007		NA	0.273	0.117	6.41	2.22	<0.06	NA	45	0.073	0.053	72.6	4.8	1870	2900	2047	10.5	surface	surface	surface	
GH-Lower Pond ²	322690	09/30/2009		85.3	<0.002	<0.006	0.017	0.991	<0.06	15.3	0.0159	<0.01	<0.0075	0.0108	7.72	254	438	524	17.1	surface	surface	surface	
GH-Lower Pond ²	323314	03/10/2010		261	0.0048	<0.0061	0.016	1.21	<0.061	49.7	0.225	<0.01	<0.0076	0.496	7.49	849	1360	1140	9.5	surface	surface	surface	
GH-Lower Pond ²	324882	09/20/2010		151	<0.002	<0.006	0.013	0.847	<0.06	25.9	0.183	<0.01	<0.0075	0.0204	8.58	430	740	874	23.5	surface	surface	surface	
GH-Lower Pond ²	326363	03/02/2011	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface	
GH-Lower Pond ²	327874	09/02/2011		130	<0.002	<0.006	0.018	0.86	<0.06	20.7	0.119	<0.01	<0.0075	<0.01	7.94	415	656	821	23.8	surface	surface	surface	
GH-Lower Pond ²	329327	03/22/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface	
GH-Lower Pond ²	330952	09/06/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	332600	03/11/2013	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	GH-Lower Pond	07/22/2013		62.3	0.0059	<0.006	0.061	0.52	<0.06	10.9	1.12	<0.01	<0.0075	1.02	6.75	210	350	442	21.6	surface	surface	surface	
GH-Lower Pond ²	334166	08/05/2013		98.1	0.0061	<0.006	0.039	0.7	<0.06	16	1.71	<0.01	<0.0075	0.447	7.52	330	494	682	26.5	surface	surface	surface	
GH-Lower Pond ²	334323	09/18/2013		123	0.018	0.0061	0.131	0.62	<0.06	24.1	2.84	<0.01	0.0077	3.53	7.09	411	634	745	21.2	surface	surface	surface	
GH-Lower Pond ²	335940	03/06/2014		333	0.0055	<0.006	0.051	1.52	<0.06	59.6	0.0924	<0.01	<0.0075	0.554	8.03	1,090	1,650	1,574	16.5	surface	surface	surface	
GH-Lower Pond ²	337695	09/09/2014		127	0.0055	<0.006	0.045	0.95	<0.06	19.5	0.812	<0.01	<0.0075	0.35	7.79	406	607	772	22.7	surface	surface	surface	
GH-Lower Pond ²	339362	03/12/2015		251	0.0377	0.0069	0.0354	1	<0.06	50.9	4.88	<0.01	<0.0075	3.66	7.18	873	1,260	1,157	13.6	surface	surface	surface	
GH-Lower Pond ²	341188	09/01/2015		83.2	0.0047	<0.006	0.0282	0.67	<0.06	13	0.92	<0.01	<0.0075	0.266	8.58	269	406	585	26.3	surface	surface	surface	
GH-Lower Pond ²	343008	03/04/2016		191	0.0043	<0.006	0.0199	0.936	<0.06	32	0.292	<0.01	<0.0075	0.216	8.27	622	956	911	13.1	surface	surface	surface	
GH-Lower Pond ²	345113	09/13/2016		108	0.0028	<0.006	0.0207	0.555	<0.1	16.3	0.467	<0.01	<0.0075	0.067	7.78	310	486	606	19.7	surface	surface	surface	
GH-Upper Pond	322692	09/30/2009	Pumped dry, mud puddle is all that remained. No water.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Upper Pond	323316	03/10/2010		306	0.155	0.124	1.77	0.636	<0.061	86.5	38.9	0.065	0.296	33.1	5.24	1370	2090	1712	13.9	surface	surface	surface	
GH-Upper Pond	324884	09/20/2010	Pumped dry, mud puddle is all that remained. No water.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Upper Pond	326365	03/02/2011	Reclaimed	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface

*Water in sump at this time was from the construction phase of the stockpile removal.

**Well depth on record is incorrect.

NS - Not sampled, sump and/or sump pond are dry.

NA - Not analysed.

¹ "GH-Sump" is the same monitoring site and location as "Lower GH-Sump" (the site was renamed)

² "GH-Lower Pond" is the same monitoring site and location as "Lower GH-Sump" (the site was renamed)



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

Project Name: Chino Routine
Work Order: **W6C0132**
Reported: 22-Mar-16 14:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
343006 / GH-2004-2D	W6C0132-01	Water	03-Mar-16 14:55	SM	08-Mar-2016	
343007 / GH-2004-2S	W6C0132-02	Water	03-Mar-16 13:45	SM	08-Mar-2016	
343008 / GH-LOWER POND	W6C0132-03	Water	04-Mar-16 11:18	SM	08-Mar-2016	
343009 / GH-SUMP	W6C0132-04	Water	04-Mar-16 10:37	SM	08-Mar-2016	

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: **W6C0132**
Reported: 22-Mar-16 14:36

Client Sample ID: **343006 : GH-2004-2D**

SVL Sample ID: **W6C0132-01 (Water)**

Sample Report Page 1 of 1

Sampled: 03-Mar-16 14:55
Received: 08-Mar-16
Sampled By: SM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0154	mg/L	0.0020	0.0009		W611088	SMB	03/15/16 12:03	
EPA 200.7	Calcium	486	mg/L	0.100	0.058		W611088	SMB	03/15/16 12:03	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0019		W611088	SMB	03/15/16 12:03	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0023		W611088	SMB	03/15/16 12:03	
EPA 200.7	Iron	< 0.060	mg/L	0.060	0.048		W611088	SMB	03/15/16 12:03	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0025		W611088	SMB	03/15/16 12:03	
EPA 200.7	Magnesium	115	mg/L	0.20	0.08		W611088	SMB	03/15/16 12:03	
EPA 200.7	Manganese	0.0539	mg/L	0.0040	0.0023		W611088	SMB	03/15/16 12:03	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0037		W611088	SMB	03/15/16 12:03	
EPA 200.7	Zinc	0.956	mg/L	0.010	0.004		W611088	SMB	03/15/16 12:03	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	2610	mg/L	40			W611099	JDM	03/09/16 14:55	D1
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.732	mg/L	0.500	0.205	5	W612082	DT	03/21/16 20:30	D1
EPA 300.0	Sulfate as SO4	1710	mg/L	15.0	6.50	50	W612082	DT	03/21/16 20:42	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: **W6C0132**
Reported: 22-Mar-16 14:36

Client Sample ID: **343007 : GH-2004-2S**

SVL Sample ID: **W6C0132-02 (Water)**

Sample Report Page 1 of 1

Sampled: 03-Mar-16 13:45
Received: 08-Mar-16
Sampled By: SM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.291	mg/L	0.0020	0.0009		W611088	SMB	03/15/16 12:06	
EPA 200.7	Calcium	458	mg/L	0.100	0.058		W611088	SMB	03/15/16 12:06	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0019		W611088	SMB	03/15/16 12:06	
EPA 200.7	Copper	0.0189	mg/L	0.0100	0.0023		W611088	SMB	03/15/16 12:06	
EPA 200.7	Iron	< 0.060	mg/L	0.060	0.048		W611088	SMB	03/15/16 12:06	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0025		W611088	SMB	03/15/16 12:06	
EPA 200.7	Magnesium	167	mg/L	0.20	0.08		W611088	SMB	03/15/16 12:06	
EPA 200.7	Manganese	16.9	mg/L	0.0040	0.0023		W611088	SMB	03/15/16 12:06	
EPA 200.7	Nickel	0.0563	mg/L	0.0100	0.0037		W611088	SMB	03/15/16 12:06	
EPA 200.7	Zinc	61.8	mg/L	0.100	0.039	10	W611088	AS	03/16/16 07:47	D2
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3420	mg/L	40			W611099	JDM	03/09/16 14:55	D1
Anions by Ion Chromatography										
EPA 300.0	Fluoride	1.66	mg/L	0.500	0.205	5	W612082	DT	03/21/16 20:54	D1
EPA 300.0	Sulfate as SO4	2370	mg/L	15.0	6.50	50	W612082	DT	03/21/16 21:06	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
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Bayard, NM 88023

Project Name: Chino Routine
Work Order: **W6C0132**
Reported: 22-Mar-16 14:36

Client Sample ID: **343008 : GH-LOWER POND**
SVL Sample ID: **W6C0132-03 (Water)**

Sampled: 04-Mar-16 11:18
Received: 08-Mar-16
Sampled By: SM

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0043	mg/L	0.0020	0.0009		W611088	SMB	03/15/16 12:09	
EPA 200.7	Calcium	191	mg/L	0.100	0.058		W611088	SMB	03/15/16 12:09	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0019		W611088	SMB	03/15/16 12:09	
EPA 200.7	Copper	0.0199	mg/L	0.0100	0.0023		W611088	SMB	03/15/16 12:09	
EPA 200.7	Iron	< 0.060	mg/L	0.060	0.048		W611088	SMB	03/15/16 12:09	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0025		W611088	SMB	03/15/16 12:09	
EPA 200.7	Magnesium	32.0	mg/L	0.20	0.08		W611088	SMB	03/15/16 12:09	
EPA 200.7	Manganese	0.292	mg/L	0.0040	0.0023		W611088	SMB	03/15/16 12:09	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0037		W611088	SMB	03/15/16 12:09	
EPA 200.7	Zinc	0.216	mg/L	0.010	0.004		W611088	SMB	03/15/16 12:09	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	956	mg/L	10			W611099	JDM	03/09/16 14:55	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.936	mg/L	0.100	0.041		W612082	DT	03/21/16 21:17	
EPA 300.0	Sulfate as SO4	622	mg/L	7.50	3.25	25	W612082	DT	03/21/16 21:29	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: **W6C0132**
Reported: 22-Mar-16 14:36

Client Sample ID: **343009 : GH-SUMP**
SVL Sample ID: **W6C0132-04 (Water)**

Sampled: 04-Mar-16 10:37
Received: 08-Mar-16
Sampled By: SM

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0065	mg/L	0.0020	0.0009		W611088	SMB	03/15/16 12:12	
EPA 200.7	Calcium	186	mg/L	0.100	0.058		W611088	SMB	03/15/16 12:12	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0019		W611088	SMB	03/15/16 12:12	
EPA 200.7	Copper	0.0200	mg/L	0.0100	0.0023		W611088	SMB	03/15/16 12:12	
EPA 200.7	Iron	< 0.060	mg/L	0.060	0.048		W611088	SMB	03/15/16 12:12	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0025		W611088	SMB	03/15/16 12:12	
EPA 200.7	Magnesium	29.2	mg/L	0.20	0.08		W611088	SMB	03/15/16 12:12	
EPA 200.7	Manganese	< 0.0040	mg/L	0.0040	0.0023		W611088	SMB	03/15/16 12:12	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0037		W611088	SMB	03/15/16 12:12	
EPA 200.7	Zinc	1.54	mg/L	0.010	0.004		W611088	SMB	03/15/16 12:12	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	884	mg/L	10			W611099	JDM	03/09/16 14:55	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.928	mg/L	0.100	0.041		W612082	DT	03/21/16 23:41	
EPA 300.0	Sulfate as SO4	554	mg/L	7.50	3.25	25	W612082	DT	03/21/16 23:53	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
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Project Name: Chino Routine
 Work Order: **W6C0132**
 Reported: 22-Mar-16 14:36

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	W611088	15-Mar-16	
EPA 200.7	Calcium	mg/L	<0.100	0.058	0.100	W611088	15-Mar-16	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0019	0.0060	W611088	15-Mar-16	
EPA 200.7	Copper	mg/L	<0.0100	0.0023	0.0100	W611088	15-Mar-16	
EPA 200.7	Iron	mg/L	<0.060	0.048	0.060	W611088	15-Mar-16	
EPA 200.7	Lead	mg/L	<0.0075	0.0025	0.0075	W611088	15-Mar-16	
EPA 200.7	Magnesium	mg/L	<0.20	0.08	0.20	W611088	15-Mar-16	
EPA 200.7	Manganese	mg/L	<0.0040	0.0023	0.0040	W611088	15-Mar-16	
EPA 200.7	Nickel	mg/L	<0.0100	0.0037	0.0100	W611088	15-Mar-16	
EPA 200.7	Zinc	mg/L	<0.010	0.004	0.010	W611088	15-Mar-16	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	<10		10	W611099	09-Mar-16	
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Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.041	0.100	W612082	21-Mar-16	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.13	0.30	W612082	21-Mar-16	

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	1.07	1.00	107	85 - 115	W611088	15-Mar-16	
EPA 200.7	Calcium	mg/L	18.6	20.0	93.0	85 - 115	W611088	15-Mar-16	
EPA 200.7	Cobalt	mg/L	1.05	1.00	105	85 - 115	W611088	15-Mar-16	
EPA 200.7	Copper	mg/L	1.02	1.00	102	85 - 115	W611088	15-Mar-16	
EPA 200.7	Iron	mg/L	9.10	10.0	91.0	85 - 115	W611088	15-Mar-16	
EPA 200.7	Lead	mg/L	1.07	1.00	107	85 - 115	W611088	15-Mar-16	
EPA 200.7	Magnesium	mg/L	18.4	20.0	92.1	85 - 115	W611088	15-Mar-16	
EPA 200.7	Manganese	mg/L	0.979	1.00	97.9	85 - 115	W611088	15-Mar-16	
EPA 200.7	Nickel	mg/L	1.09	1.00	109	85 - 115	W611088	15-Mar-16	
EPA 200.7	Zinc	mg/L	1.08	1.00	108	85 - 115	W611088	15-Mar-16	
Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	2.02	2.00	101	90 - 110	W612082	21-Mar-16	
EPA 300.0	Sulfate as SO4	mg/L	10.3	10.0	103	90 - 110	W612082	21-Mar-16	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2540 C	Total Diss. Solids	mg/L	899	884	1.7	10	W611099	09-Mar-16	
SM 2540 C	Total Diss. Solids	mg/L	954	956	0.2	10	W611099	09-Mar-16	



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

Project Name: Chino Routine
 Work Order: **W6C0132**
 Reported: 22-Mar-16 14:36

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	mg/L	1.11	<0.0020	1.00	111	70 - 130	W611088	15-Mar-16	
EPA 200.7	Cadmium	mg/L	1.12	0.0065	1.00	111	70 - 130	W611088	15-Mar-16	
EPA 200.7	Calcium	mg/L	51.7	32.6	20.0	95.7	70 - 130	W611088	15-Mar-16	
EPA 200.7	Calcium	mg/L	204	186	20.0	92.1	70 - 130	W611088	15-Mar-16	
EPA 200.7	Cobalt	mg/L	1.07	<0.0060	1.00	107	70 - 130	W611088	15-Mar-16	
EPA 200.7	Cobalt	mg/L	1.06	<0.0060	1.00	106	70 - 130	W611088	15-Mar-16	
EPA 200.7	Copper	mg/L	1.06	<0.0100	1.00	106	70 - 130	W611088	15-Mar-16	
EPA 200.7	Copper	mg/L	1.09	0.0200	1.00	107	70 - 130	W611088	15-Mar-16	
EPA 200.7	Iron	mg/L	9.52	<0.060	10.0	95.2	70 - 130	W611088	15-Mar-16	
EPA 200.7	Iron	mg/L	9.57	<0.060	10.0	95.7	70 - 130	W611088	15-Mar-16	
EPA 200.7	Lead	mg/L	1.08	<0.0075	1.00	108	70 - 130	W611088	15-Mar-16	
EPA 200.7	Lead	mg/L	1.06	<0.0075	1.00	106	70 - 130	W611088	15-Mar-16	
EPA 200.7	Magnesium	mg/L	30.5	11.2	20.0	96.4	70 - 130	W611088	15-Mar-16	
EPA 200.7	Magnesium	mg/L	48.0	29.2	20.0	94.0	70 - 130	W611088	15-Mar-16	
EPA 200.7	Manganese	mg/L	1.01	<0.0040	1.00	101	70 - 130	W611088	15-Mar-16	
EPA 200.7	Manganese	mg/L	1.02	<0.0040	1.00	101	70 - 130	W611088	15-Mar-16	
EPA 200.7	Nickel	mg/L	1.11	<0.0100	1.00	111	70 - 130	W611088	15-Mar-16	
EPA 200.7	Nickel	mg/L	1.09	<0.0100	1.00	109	70 - 130	W611088	15-Mar-16	
EPA 200.7	Zinc	mg/L	1.11	<0.010	1.00	111	70 - 130	W611088	15-Mar-16	
EPA 200.7	Zinc	mg/L	2.60	1.54	1.00	106	70 - 130	W611088	15-Mar-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.72	0.653	2.00	103	90 - 110	W612082	21-Mar-16	
EPA 300.0	Fluoride	mg/L	2.25	0.215	2.00	101	90 - 110	W612082	21-Mar-16	
EPA 300.0	Sulfate as SO4	mg/L	77.5	67.5	10.0	100	90 - 110	W612082	21-Mar-16	D2
EPA 300.0	Sulfate as SO4	mg/L	120	110	10.0	95.2	90 - 110	W612082	21-Mar-16	D2

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Dissolved)											
EPA 200.7	Cadmium	mg/L	1.10	1.11	1.00	110	0.6	20	W611088	15-Mar-16	
EPA 200.7	Calcium	mg/L	51.1	51.7	20.0	92.9	1.1	20	W611088	15-Mar-16	
EPA 200.7	Cobalt	mg/L	1.07	1.07	1.00	107	0.4	20	W611088	15-Mar-16	
EPA 200.7	Copper	mg/L	1.06	1.06	1.00	106	0.3	20	W611088	15-Mar-16	
EPA 200.7	Iron	mg/L	9.44	9.52	10.0	94.4	0.9	20	W611088	15-Mar-16	
EPA 200.7	Lead	mg/L	1.08	1.08	1.00	108	0.0	20	W611088	15-Mar-16	
EPA 200.7	Magnesium	mg/L	30.0	30.5	20.0	94.0	1.6	20	W611088	15-Mar-16	
EPA 200.7	Manganese	mg/L	1.01	1.01	1.00	101	0.5	20	W611088	15-Mar-16	
EPA 200.7	Nickel	mg/L	1.10	1.11	1.00	110	0.7	20	W611088	15-Mar-16	
EPA 200.7	Zinc	mg/L	1.11	1.11	1.00	111	0.3	20	W611088	15-Mar-16	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	2.72	2.72	2.00	103	0.2	20	W612082	21-Mar-16	
EPA 300.0	Sulfate as SO4	mg/L	78.0	77.5	10.0	105	0.7	20	W612082	21-Mar-16	D2



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

Project Name: Chino Routine
Work Order: **W6C0132**
Reported: 22-Mar-16 14:36

Notes and Definitions

- D1 Sample required dilution due to matrix.
 - D2 Sample required dilution due to high concentration of target analyte.
 - 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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Freeport McMoRan - Chino Mines
PO Box 10
Bayard, NM 88023

Project Name: Chino Routine
Work Order: **W610199**
Reported: 23-Sep-16 12:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
345122 / FIELD BLANK-CHINO	W610199-01	Water	06-Sep-16 13:09	SM	09-Sep-2016	
345112 / GH-2004-2S	W610199-02	Water	06-Sep-16 13:08	SM	09-Sep-2016	

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.

GH 09 - 2016



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

Project Name: Chino Routine
Work Order: **W610414**
Reported: 30-Sep-16 12:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
345111 / GH-2004-2D	W6I0414-01	Water	13-Sep-16 09:30	SM	16-Sep-2016	
345113 / GH-LOWER POND	W6I0414-02	Water	13-Sep-16 10:00	SM	16-Sep-2016	
345114 / GH-SUMP	W6I0414-03	Water	14-Sep-16 11:54	SM	16-Sep-2016	

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: W610414
Reported: 30-Sep-16 12:30

Client Sample ID: **345111 : GH-2004-2D**
SVL Sample ID: **W610414-01 (Water)**

Sampled: 13-Sep-16 09:30
Received: 16-Sep-16
Sampled By: SM

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0146	mg/L	0.0020	0.0009		W639007	SMB	09/28/16 09:45	
EPA 200.7	Calcium	505	mg/L	0.100	0.041		W639007	SMB	09/28/16 09:45	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0010		W639007	SMB	09/28/16 09:45	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0026		W639007	SMB	09/28/16 09:45	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.039		W639007	SMB	09/28/16 09:45	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0036		W639007	SMB	09/28/16 09:45	
EPA 200.7	Magnesium	116	mg/L	0.20	0.08		W639007	SMB	09/28/16 09:45	
EPA 200.7	Manganese	0.0276	mg/L	0.0080	0.0024		W639007	SMB	09/28/16 09:45	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0026		W639007	SMB	09/28/16 09:45	
EPA 200.7	Zinc	0.790	mg/L	0.010	0.003		W639007	SMB	09/28/16 09:45	
EPA 200.8	Uranium	0.00356	mg/L	0.00100	0.000017		W639122	KWH	09/29/16 10:38	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	2530	mg/L	40			W639020	RS	09/19/16 11:50	Q23
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W640139	DT	09/29/16 17:29	
EPA 300.0	Sulfate as SO4	1650	mg/L	15.0	1.55	50	W640139	DT	09/29/16 17:46	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: W610199
Reported: 23-Sep-16 12:45

Client Sample ID: **345112 : GH-2004-2S**
SVL Sample ID: **W610199-02 (Water)**

Sampled: 06-Sep-16 13:08
Received: 09-Sep-16
Sampled By: SM

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.221	mg/L	0.0020	0.0009		W638001	AS	09/22/16 12:13	
EPA 200.7	Calcium	509	mg/L	0.100	0.041		W638001	AS	09/22/16 12:13	M3
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0010		W638001	AS	09/22/16 12:13	
EPA 200.7	Copper	0.0103	mg/L	0.0100	0.0026		W638001	AS	09/22/16 12:13	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.039		W638001	AS	09/22/16 12:13	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0036		W638001	AS	09/22/16 12:13	
EPA 200.7	Magnesium	180	mg/L	0.20	0.08		W638001	AS	09/22/16 12:13	
EPA 200.7	Manganese	7.83	mg/L	0.0080	0.0024		W638001	AS	09/22/16 12:13	
EPA 200.7	Nickel	0.0426	mg/L	0.0100	0.0026		W638001	AS	09/22/16 12:13	
EPA 200.7	Zinc	61.7	mg/L	0.100	0.028	10	W638001	SMB	09/22/16 13:51	D2,M3
EPA 200.8	Uranium	0.00152	mg/L	0.00100	0.000017		W638057	KWH	09/21/16 10:07	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3310	mg/L	40			W638038	RS	09/12/16 16:30	Q23
Anions by Ion Chromatography										
EPA 300.0	Fluoride	1.86	mg/L	0.500	0.090	5	W639076	DT	09/20/16 22:29	D1
EPA 300.0	Sulfate as SO4	2220	mg/L	15.0	1.55	50	W639076	DT	09/20/16 22:41	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: **W610414**
Reported: 30-Sep-16 12:30

Client Sample ID: **345113 : GH-LOWER POND**
SVL Sample ID: **W610414-02 (Water)**

Sampled: 13-Sep-16 10:00
Received: 16-Sep-16
Sampled By: SM

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0028	mg/L	0.0020	0.0009		W639007	SMB	09/28/16 09:49	
EPA 200.7	Calcium	108	mg/L	0.100	0.041		W639007	SMB	09/28/16 09:49	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0010		W639007	SMB	09/28/16 09:49	
EPA 200.7	Copper	0.0207	mg/L	0.0100	0.0026		W639007	SMB	09/28/16 09:49	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.039		W639007	SMB	09/28/16 09:49	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0036		W639007	SMB	09/28/16 09:49	
EPA 200.7	Magnesium	16.3	mg/L	0.20	0.08		W639007	SMB	09/28/16 09:49	
EPA 200.7	Manganese	0.467	mg/L	0.0080	0.0024		W639007	SMB	09/28/16 09:49	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0026		W639007	SMB	09/28/16 09:49	
EPA 200.7	Zinc	0.067	mg/L	0.010	0.003		W639007	SMB	09/28/16 09:49	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	486	mg/L	10			W639020	RS	09/19/16 11:50	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.555	mg/L	0.100	0.018		W640139	DT	09/29/16 18:03	
EPA 300.0	Sulfate as SO4	310	mg/L	3.00	0.31	10	W640139	DT	09/29/16 18:20	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: **W610414**
Reported: 30-Sep-16 12:30

Client Sample ID: **345114 : GH-SUMP**
SVL Sample ID: **W610414-03 (Water)**

Sampled: 14-Sep-16 11:54
Received: 16-Sep-16
Sampled By: SM

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0046	mg/L	0.0020	0.0009		W639007	SMB	09/28/16 09:52	
EPA 200.7	Calcium	159	mg/L	0.100	0.041		W639007	SMB	09/28/16 09:52	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0010		W639007	SMB	09/28/16 09:52	
EPA 200.7	Copper	0.0279	mg/L	0.0100	0.0026		W639007	SMB	09/28/16 09:52	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.039		W639007	SMB	09/28/16 09:52	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0036		W639007	SMB	09/28/16 09:52	
EPA 200.7	Magnesium	23.4	mg/L	0.20	0.08		W639007	SMB	09/28/16 09:52	
EPA 200.7	Manganese	0.0197	mg/L	0.0080	0.0024		W639007	SMB	09/28/16 09:52	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0026		W639007	SMB	09/28/16 09:52	
EPA 200.7	Zinc	0.720	mg/L	0.010	0.003		W639007	SMB	09/28/16 09:52	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	691	mg/L	10			W639020	RS	09/19/16 11:50	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.639	mg/L	0.100	0.018		W640139	DT	09/29/16 18:45	
EPA 300.0	Sulfate as SO4	404	mg/L	3.00	0.31	10	W640139	DT	09/29/16 19:02	D2,M3

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: W610199 Reported: 23-Sep-16 12:45
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Client Sample ID: **345122 : FIELD BLANK-CHINO**

SVL Sample ID: **W610199-01 (Water)**

Sample Report Page 1 of 1

Sampled: 06-Sep-16 13:09

Received: 09-Sep-16

Sampled By: SM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3360	mg/L	40			W638038	RS	09/12/16 16:30	Q23
Anions by Ion Chromatography										
EPA 300.0	Sulfate as SO4	2210	mg/L	15.0	1.55	50	W639076	DT	09/20/16 17:38	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: W610199
Reported: 23-Sep-16 12:45

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	W638001	22-Sep-16	
EPA 200.7	Calcium	mg/L	<0.100	0.041	0.100	W638001	22-Sep-16	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0010	0.0060	W638001	22-Sep-16	
EPA 200.7	Copper	mg/L	<0.0100	0.0026	0.0100	W638001	22-Sep-16	
EPA 200.7	Iron	mg/L	<0.100	0.039	0.100	W638001	22-Sep-16	
EPA 200.7	Lead	mg/L	<0.0075	0.0036	0.0075	W638001	22-Sep-16	
EPA 200.7	Magnesium	mg/L	<0.20	0.08	0.20	W638001	22-Sep-16	
EPA 200.7	Manganese	mg/L	<0.0080	0.0024	0.0080	W638001	22-Sep-16	
EPA 200.7	Nickel	mg/L	<0.0100	0.0026	0.0100	W638001	22-Sep-16	
EPA 200.7	Zinc	mg/L	<0.010	0.003	0.010	W638001	22-Sep-16	
EPA 200.8	Uranium	mg/L	<0.00100	0.000017	0.00100	W638057	21-Sep-16	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	<10		10	W638038	12-Sep-16	
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Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W639076	20-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.03	0.30	W639076	20-Sep-16	

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	0.945	1.00	94.5	85 - 115	W638001	22-Sep-16	
EPA 200.7	Calcium	mg/L	19.2	20.0	95.8	85 - 115	W638001	22-Sep-16	
EPA 200.7	Cobalt	mg/L	0.968	1.00	96.8	85 - 115	W638001	22-Sep-16	
EPA 200.7	Copper	mg/L	0.985	1.00	98.5	85 - 115	W638001	22-Sep-16	
EPA 200.7	Iron	mg/L	9.77	10.0	97.7	85 - 115	W638001	22-Sep-16	
EPA 200.7	Lead	mg/L	0.958	1.00	95.8	85 - 115	W638001	22-Sep-16	
EPA 200.7	Magnesium	mg/L	19.2	20.0	95.9	85 - 115	W638001	22-Sep-16	
EPA 200.7	Manganese	mg/L	0.992	1.00	99.2	85 - 115	W638001	22-Sep-16	
EPA 200.7	Nickel	mg/L	0.964	1.00	96.4	85 - 115	W638001	22-Sep-16	
EPA 200.7	Zinc	mg/L	0.949	1.00	94.9	85 - 115	W638001	22-Sep-16	
EPA 200.8	Uranium	mg/L	0.0255	0.0250	102	85 - 115	W638057	21-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	1.92	2.00	95.8	90 - 110	W639076	20-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	10.1	10.0	101	90 - 110	W639076	20-Sep-16	



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

Project Name: Chino Routine
Work Order: W610199
 Reported: 23-Sep-16 12:45

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	794	795	0.1	10	W638038	12-Sep-16	
SM 2540 C	Total Diss. Solids	mg/L	796	795	0.1	10	W638038	12-Sep-16	

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	1.20	0.221	1.00	98.4	70 - 130	W638001	22-Sep-16	
EPA 200.7	Calcium	mg/L	520	509	20.0	R > 4S	70 - 130	W638001	22-Sep-16	M3
EPA 200.7	Cobalt	mg/L	0.928	<0.0060	1.00	92.8	70 - 130	W638001	22-Sep-16	
EPA 200.7	Copper	mg/L	0.997	0.0103	1.00	98.6	70 - 130	W638001	22-Sep-16	
EPA 200.7	Iron	mg/L	9.26	<0.100	10.0	91.8	70 - 130	W638001	22-Sep-16	
EPA 200.7	Lead	mg/L	0.899	<0.0075	1.00	89.9	70 - 130	W638001	22-Sep-16	
EPA 200.7	Magnesium	mg/L	195	180	20.0	75.3	70 - 130	W638001	22-Sep-16	
EPA 200.7	Manganese	mg/L	8.66	7.83	1.00	82.3	70 - 130	W638001	22-Sep-16	
EPA 200.7	Nickel	mg/L	0.960	0.0426	1.00	91.8	70 - 130	W638001	22-Sep-16	
EPA 200.7	Zinc	mg/L	62.6	61.7	1.00	91.2	70 - 130	W638001	22-Sep-16	D2
EPA 200.8	Uranium	mg/L	0.0273	0.00152	0.0250	103	70 - 130	W638057	21-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.55	0.664	2.00	94.4	90 - 110	W639076	20-Sep-16	
EPA 300.0	Fluoride	mg/L	2.06	<0.100	2.00	98.4	90 - 110	W639076	20-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	244	238	10.0	R > 4S	90 - 110	W639076	20-Sep-16	D2,M3
EPA 300.0	Sulfate as SO4	mg/L	10.3	<0.30	10.0	103	90 - 110	W639076	20-Sep-16	

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	1.24	1.20	1.00	101	2.5	20	W638001	22-Sep-16	
EPA 200.7	Calcium	mg/L	524	520	20.0	75.0	0.7	20	W638001	22-Sep-16	
EPA 200.7	Cobalt	mg/L	0.952	0.928	1.00	95.2	2.6	20	W638001	22-Sep-16	
EPA 200.7	Copper	mg/L	1.02	0.997	1.00	101	2.7	20	W638001	22-Sep-16	
EPA 200.7	Iron	mg/L	9.63	9.26	10.0	95.6	4.0	20	W638001	22-Sep-16	
EPA 200.7	Lead	mg/L	0.921	0.899	1.00	92.1	2.4	20	W638001	22-Sep-16	
EPA 200.7	Magnesium	mg/L	195	195	20.0	76.8	0.2	20	W638001	22-Sep-16	
EPA 200.7	Manganese	mg/L	8.72	8.66	1.00	88.8	0.7	20	W638001	22-Sep-16	
EPA 200.7	Nickel	mg/L	0.985	0.960	1.00	94.3	2.6	20	W638001	22-Sep-16	
EPA 200.7	Zinc	mg/L	57.0	62.6	1.00	R > 4S	9.3	20	W638001	22-Sep-16	D2,M3
EPA 200.8	Uranium	mg/L	0.0269	0.0273	0.0250	102	1.5	20	W638057	21-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.54	2.55	2.00	93.6	0.6	20	W639076	20-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	244	244	10.0	R > 4S	0.2	20	W639076	20-Sep-16	D2,M3



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

Project Name: Chino Routine
Work Order: **W610199**
Reported: 23-Sep-16 12:45

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.
 - Q23 Initial volume reduced to yield a residue less than 200mg.
 - 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 Routine Work Order: W610414 Reported: 30-Sep-16 12:30
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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	W639007	28-Sep-16		
EPA 200.7	Calcium	mg/L	<0.100	0.041	0.100	W639007	28-Sep-16		
EPA 200.7	Cobalt	mg/L	<0.0060	0.0010	0.0060	W639007	28-Sep-16		
EPA 200.7	Copper	mg/L	<0.0100	0.0026	0.0100	W639007	28-Sep-16		
EPA 200.7	Iron	mg/L	<0.100	0.039	0.100	W639007	28-Sep-16		
EPA 200.7	Lead	mg/L	<0.0075	0.0036	0.0075	W639007	28-Sep-16		
EPA 200.7	Magnesium	mg/L	<0.20	0.08	0.20	W639007	28-Sep-16		
EPA 200.7	Manganese	mg/L	<0.0080	0.0024	0.0080	W639007	28-Sep-16		
EPA 200.7	Nickel	mg/L	<0.0100	0.0026	0.0100	W639007	28-Sep-16		
EPA 200.7	Zinc	mg/L	<0.010	0.003	0.010	W639007	28-Sep-16		
EPA 200.8	Uranium	mg/L	<0.00100	0.000017	0.00100	W639122	29-Sep-16		

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	<10		10	W639020	19-Sep-16		
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Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W640139	29-Sep-16		
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.03	0.30	W640139	29-Sep-16		

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	0.986	1.00	98.6	85 - 115	W639007	28-Sep-16	
EPA 200.7	Calcium	mg/L	20.0	20.0	100	85 - 115	W639007	28-Sep-16	
EPA 200.7	Cobalt	mg/L	0.987	1.00	98.7	85 - 115	W639007	28-Sep-16	
EPA 200.7	Copper	mg/L	1.02	1.00	102	85 - 115	W639007	28-Sep-16	
EPA 200.7	Iron	mg/L	9.57	10.0	95.7	85 - 115	W639007	28-Sep-16	
EPA 200.7	Lead	mg/L	0.988	1.00	98.8	85 - 115	W639007	28-Sep-16	
EPA 200.7	Magnesium	mg/L	19.3	20.0	96.7	85 - 115	W639007	28-Sep-16	
EPA 200.7	Manganese	mg/L	0.982	1.00	98.2	85 - 115	W639007	28-Sep-16	
EPA 200.7	Nickel	mg/L	0.993	1.00	99.3	85 - 115	W639007	28-Sep-16	
EPA 200.7	Zinc	mg/L	0.993	1.00	99.3	85 - 115	W639007	28-Sep-16	
EPA 200.8	Uranium	mg/L	0.0251	0.0250	100	85 - 115	W639122	29-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	1.91	2.00	95.3	90 - 110	W640139	29-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	10.4	10.0	104	90 - 110	W640139	29-Sep-16	



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

Project Name: Chino Routine
Work Order: W610414
 Reported: 30-Sep-16 12:30

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
SM 2540 C	Total Diss. Solids	mg/L	1080	1080	0.6	10	W639020	19-Sep-16	
SM 2540 C	Total Diss. Solids	mg/L	407	429	5.3	10	W639020	19-Sep-16	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	1080	1080	0.6	10	W639020	19-Sep-16	
SM 2540 C	Total Diss. Solids	mg/L	407	429	5.3	10	W639020	19-Sep-16	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 200.7	Cadmium	mg/L	1.05	<0.0020	1.00	105	70 - 130	W639007	28-Sep-16	
EPA 200.7	Cadmium	mg/L	1.03	<0.0020	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Calcium	mg/L	23.4	3.28	20.0	101	70 - 130	W639007	28-Sep-16	
EPA 200.7	Calcium	mg/L	309	289	20.0	101	70 - 130	W639007	28-Sep-16	
EPA 200.7	Cobalt	mg/L	1.03	<0.0060	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Cobalt	mg/L	0.983	<0.0060	1.00	98.3	70 - 130	W639007	28-Sep-16	
EPA 200.7	Copper	mg/L	1.05	<0.0100	1.00	105	70 - 130	W639007	28-Sep-16	
EPA 200.7	Copper	mg/L	1.03	<0.0100	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Iron	mg/L	9.95	<0.100	10.0	99.5	70 - 130	W639007	28-Sep-16	
EPA 200.7	Iron	mg/L	9.68	<0.100	10.0	96.3	70 - 130	W639007	28-Sep-16	
EPA 200.7	Lead	mg/L	1.02	<0.0075	1.00	102	70 - 130	W639007	28-Sep-16	
EPA 200.7	Lead	mg/L	0.979	<0.0075	1.00	97.9	70 - 130	W639007	28-Sep-16	
EPA 200.7	Magnesium	mg/L	20.1	<0.20	20.0	99.9	70 - 130	W639007	28-Sep-16	
EPA 200.7	Magnesium	mg/L	40.7	21.5	20.0	95.8	70 - 130	W639007	28-Sep-16	
EPA 200.7	Manganese	mg/L	1.03	<0.0080	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Manganese	mg/L	1.04	0.0469	1.00	99.2	70 - 130	W639007	28-Sep-16	
EPA 200.7	Nickel	mg/L	1.03	<0.0100	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Nickel	mg/L	1.02	0.0302	1.00	98.5	70 - 130	W639007	28-Sep-16	
EPA 200.7	Zinc	mg/L	1.06	<0.010	1.00	106	70 - 130	W639007	28-Sep-16	
EPA 200.7	Zinc	mg/L	1.02	<0.010	1.00	101	70 - 130	W639007	28-Sep-16	
EPA 200.8	Uranium	mg/L	0.0276	0.00178	0.0250	103	70 - 130	W639122	29-Sep-16	

Metals (Dissolved)

EPA 200.7	Cadmium	mg/L	1.05	<0.0020	1.00	105	70 - 130	W639007	28-Sep-16	
EPA 200.7	Cadmium	mg/L	1.03	<0.0020	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Calcium	mg/L	23.4	3.28	20.0	101	70 - 130	W639007	28-Sep-16	
EPA 200.7	Calcium	mg/L	309	289	20.0	101	70 - 130	W639007	28-Sep-16	
EPA 200.7	Cobalt	mg/L	1.03	<0.0060	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Cobalt	mg/L	0.983	<0.0060	1.00	98.3	70 - 130	W639007	28-Sep-16	
EPA 200.7	Copper	mg/L	1.05	<0.0100	1.00	105	70 - 130	W639007	28-Sep-16	
EPA 200.7	Copper	mg/L	1.03	<0.0100	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Iron	mg/L	9.95	<0.100	10.0	99.5	70 - 130	W639007	28-Sep-16	
EPA 200.7	Iron	mg/L	9.68	<0.100	10.0	96.3	70 - 130	W639007	28-Sep-16	
EPA 200.7	Lead	mg/L	1.02	<0.0075	1.00	102	70 - 130	W639007	28-Sep-16	
EPA 200.7	Lead	mg/L	0.979	<0.0075	1.00	97.9	70 - 130	W639007	28-Sep-16	
EPA 200.7	Magnesium	mg/L	20.1	<0.20	20.0	99.9	70 - 130	W639007	28-Sep-16	
EPA 200.7	Magnesium	mg/L	40.7	21.5	20.0	95.8	70 - 130	W639007	28-Sep-16	
EPA 200.7	Manganese	mg/L	1.03	<0.0080	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Manganese	mg/L	1.04	0.0469	1.00	99.2	70 - 130	W639007	28-Sep-16	
EPA 200.7	Nickel	mg/L	1.03	<0.0100	1.00	103	70 - 130	W639007	28-Sep-16	
EPA 200.7	Nickel	mg/L	1.02	0.0302	1.00	98.5	70 - 130	W639007	28-Sep-16	
EPA 200.7	Zinc	mg/L	1.06	<0.010	1.00	106	70 - 130	W639007	28-Sep-16	
EPA 200.7	Zinc	mg/L	1.02	<0.010	1.00	101	70 - 130	W639007	28-Sep-16	
EPA 200.8	Uranium	mg/L	0.0276	0.00178	0.0250	103	70 - 130	W639122	29-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.57	0.683	2.00	94.5	90 - 110	W640139	29-Sep-16	
EPA 300.0	Fluoride	mg/L	2.47	0.639	2.00	91.4	90 - 110	W640139	29-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	283	277	10.0	R > 4S	90 - 110	W640139	29-Sep-16	D2,M3
EPA 300.0	Sulfate as SO4	mg/L	408	404	10.0	R > 4S	90 - 110	W640139	29-Sep-16	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
EPA 200.7	Cadmium	mg/L	1.05	1.05	1.00	105	0.1	20	W639007	28-Sep-16	
EPA 200.7	Calcium	mg/L	23.3	23.4	20.0	100	0.3	20	W639007	28-Sep-16	
EPA 200.7	Cobalt	mg/L	1.03	1.03	1.00	103	0.1	20	W639007	28-Sep-16	
EPA 200.7	Copper	mg/L	1.05	1.05	1.00	105	0.3	20	W639007	28-Sep-16	
EPA 200.7	Iron	mg/L	9.85	9.95	10.0	98.5	1.0	20	W639007	28-Sep-16	
EPA 200.7	Lead	mg/L	1.03	1.02	1.00	103	0.3	20	W639007	28-Sep-16	
EPA 200.7	Magnesium	mg/L	19.9	20.1	20.0	99.2	0.7	20	W639007	28-Sep-16	
EPA 200.7	Manganese	mg/L	1.03	1.03	1.00	103	0.4	20	W639007	28-Sep-16	
EPA 200.7	Nickel	mg/L	1.04	1.03	1.00	104	0.1	20	W639007	28-Sep-16	
EPA 200.7	Zinc	mg/L	1.06	1.06	1.00	106	0.0	20	W639007	28-Sep-16	

SVL holds the following certifications:

AZ:0538, CA:2080, ID:ID00019 & ID00965 (Microbiology), NV:ID000192007A, UT(TNI):ID000192015-1, WA:C573



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

Project Name: Chino Routine
Work Order: **W610414**
Reported: 30-Sep-16 12:30

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Dissolved) (Continued)											
EPA 200.8	Uranium	mg/L	0.0268	0.0276	0.0250	100	2.9	20	W639122	29-Sep-16	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	2.55	2.57	2.00	93.3	1.0	20	W640139	29-Sep-16	
EPA 300.0	Sulfate as SO4	mg/L	284	283	10.0	R > 4S	0.3	20	W640139	29-Sep-16	D2,M3

Notes and Definitions

- 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.
- Q23 Initial volume reduced to yield a residue less than 200mg.
- 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>Ground Hog</i>	Weather Conditions: <i>Partly Cloudy</i>
Inspector: <i>Steven Garcia</i>	
Time/Date: <i>1:30 12-22-2015</i>	
Vegetation Conditions: <i>Abundant dry grass and some live plants visible throughout.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible. Remains to fill on the south end of the upper portion of ground house holding out.</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>Star Shaft</i>	Weather Conditions: <i>Partly cloudy cold.</i>
Inspector: <i>Steven Garcia</i>	
Time/Date: <i>9:30 12-22-2015</i>	
Vegetation Conditions: <i>Abundant dry GRASS visible. Along with some live plants and shrubs.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>None</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>Partly Cloudy and Cold.</i>
Inspector: <i>Steven Garcia</i>	
Time/Date: <i>9:40 12-22-2015</i>	
Vegetation Conditions: <i>Some dry grass visible Along with various oak scrub.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None</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>Partly Cloudy Cold.</i>
Inspector: <i>Steven Garcia</i>	
Time/Date: <i>9:50 12-22-2015</i>	
Vegetation Conditions: <i>Abundant dry grass visible along with various live plants scattered through out 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>None.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Oceola</i>	Weather Conditions: <i>Partly Cloudy & Cold.</i>
Inspector: <i>Steven Garcia</i>	
Time/Date: <i>10:00 12-22-2015</i>	
Vegetation Conditions: <i>SPARSE vegetation visible, some dry GRASS and SCRUB OAK.</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>Razor Back East</i>	Weather Conditions: <i>Partly Cloudy</i>
Inspector: <i>Steven Garcia</i>	
Time/Date: <i>10:45 12-22-2015</i>	
Vegetation Conditions: <i>Abundant dry GRASS Visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible. seen various small rills visible throughout site.</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</i>		Weather Conditions:	
Inspector: <i>Steven Garcia</i>			
Time/Date: <i>11:15 12-22-2015</i>			
Vegetation Conditions: <i>Abundant dry grass 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>			