



Tyrone Operations
P.O. Box 571
Tyrone, NM 88065

August 3, 2018

Certified Mail #9171999991703579963294
Return Receipt Required

Mr. David Otori, Permit Lead
Mining Act Reclamation Program
Energy, Minerals and Natural Resources Department
1220 South St. Francis Dr.
Santa Fe, NM 87505

Dear Mr. Otori:

Re: Response to Comments on Emma Exploration Project Minimal
Impact Exploration Application, Permit No. GR079EM dated July 30, 2018

Freeport-McMoRan Tyrone Inc. (Tyrone) submitted an application for a minimal impact exploration permit to the Mining and Minerals Division (MMD) on May 31, 2018, for the Emma Exploration Project (Emma). Tyrone received a letter dated July 30, 2018, with comments from MMD.

Tyrone's staff has reviewed your response and comments to our Emma. Below are MMD's comments, in italics, followed by Tyrone's response.

- 1. MMD received the Application from Tyrone on June 4, 2018 and requested additional information from Tyrone regarding the application in an e-mail, dated June 19, 2018. MMD requested clarification of the actual number of proposed drill holes, whether mud rotary drilling is proposed to be used, and commented on the inclusion of "oats" in the proposed reclamation seed mix. Tyrone provided a response to the MMD request for additional information in an e-mail, dated June 20, 2018. MMD included the response by Tyrone as a supplement to the Application.*

Tyrone has no comment.

Specific Comments

- 1. Section 6, Groundwater/Surface Water Information, Subsection A, page 16 of the Application requests Depth to groundwater and TDS (total dissolved solids in mg/L). Tyrone responded that the TDS concentration is "unknown". Please provide a TDS concentration of the groundwater if available from an area well.*

As stated in the original application, there is no data on TDS at Emma. However, attached is the nearest well data showing TDS concentration of groundwater. Tyrone is not sure what relevance this data has to this application or the project. All water, if any produced, will be mixed with fresh water trucked in from Tyrone for drilling, contained in the mud pits, and thus allowed to evaporate out. Never the less, this data is hereby provided to best of Tyrone's ability.

2. *Section 6, Groundwater /Surface Water Information, Subsection F, page 18 of the Application asks if any of the proposed drilling will occur within 100 feet of any perennial, intermittent, or ephemeral streams. Tyrone responded "no" to this question. However, during an inspection of the proposed Emma Exploration Project conducted by MMD on July 12, 2018, a number of proposed exploration drill hole locations were observed to be located within approximately 100 feet of an intermittent or ephemeral stream (proposed exploration drill holes# 4, 5, 13, 24 and 25). No perennial streams were observed during the inspection. During the inspection, Tyrone staff agreed to relocate these and other holes that may be located within 100 feet of a drainage bottom at least 100 feet away from these drainages. Please confirm that the exploration drill holes that are located within 100 feet of a drainage bottom will be relocated and provide an updated map showing the new locations of the proposed exploration drill holes and the other exploration drill holes proposed in the Application.*

Tyrone has agreed to move two drill holes as discussed in the field during your visit on July 12, 2018. Your comment letter of July 30, 2018, indicated that you wanted additional holes moved, specifically hole numbers 4, 5, 13, 24 and 25. We have moved all of these holes to at least 100 feet from any ephemeral water features and eliminated drill hole number 24. Attached is a new map showing the revised locations along with a new legal description of the drill holes.

3. *Section 7, Reclamation and Operating Plan, Subsection D, Reclamation Details, page 20 of the Application states that the drill sites will be regraded. During the MMD inspection, a number of the proposed drill pad will be on hill slopes. Will the drill pads that are located on hill slopes be regraded to approximate original contours (i.e., will the drill pad areas be backfilled and regraded with the soils and rock that were excavated to recreate the approximate original slopes present prior to the exploration project)?*

Tyrone's reclamation plans do not propose to regrade the drill pads, as doing so, especially on the hillsides, in all likelihood would jeopardize the integrity of the plugged and abandoned drill holes. Further, the stability of the site in respect to potential erosion would be better protected by leaving the drill site as constructed.

Tyrone will design and build the drill pads in a manner to allow final reclamation configuration that mitigates the disturbance to the extent practicable, provides stabilization to the permit area, minimizes future impact to the environment, and protects air and water resources. Tyrone will accomplish this by minimizing potential erosion while the vegetation is established through building berms and water bars to hold any normal precipitation events that occur within the winter months and ensuing spring. For purposes of this application, Tyrone will accept the proposed seed mix emailed to Ty Bays on August 2, 2018 from David Otori, and we will reseed the area within 60 days of the completion of drilling to establish at least a cover crop over perennial seeds that will ensure native vegetation establishment.

4. *Section 7, Reclamation and Operating Plan, Subsection D, Reclamation Details, page 21 of the Application provides a proposed seed mix. Appendix A of Revision 14-1 of Permit No. GR007RE for the Little Rock Mine includes an approved seed mix. In addition, the Tyrone Mine is currently conducting vegetation test plots at the USNR stockpile area. The native vegetation near these areas appear to be similar to the vegetation of the area of the Emma Exploration Project. MMD recommends*

that the reclamation seed mix for the Emma Exploration Project consist of plant species that are consistent with the seed mix of either the Little Rock Mine or the USNR test plots at the Tyrone Mine. In addition, if Tyrone wishes to include "cover crop" types of plant species, MMD recommends the use of a winter wheat rather than oats if the seeding will be done in the fall.

For purposes of this application, Tyrone will accept the proposed seed mix emailed to Ty Bays on August 2, 2018 from David Ohori.

Financial Assurance Cost Estimate

1. *MMD has reviewed the third-party financial assurance cost estimate proposed by Tyrone that was provided with the Application and provides the following comments:*
 - a. *A motor grader is proposed as the only heavy equipment used for the reclamation of the proposed surface disturbance. Use of a backhoe and or dozer and an excavator is likely more appropriate. In addition, moving this equipment from drill pad to drill pad over the hilly quarter-section of area will take time. Total proposed time of equipment use in the cost estimate is 8 hours and is insufficient.*
 - b. *A light duty truck is estimated at \$16.16 for the duration of the project. An ATV is estimated at \$40.40. Both of these estimates are insufficient for a third-party cost estimate for this project.*
 - c. *The two personnel listed are an Equipment Operator at 9.6 hours and a Laborer at 4 hours. Staff time for a third-party cost estimate should include time getting to the project, standby time, working time and returning to Silver City. In addition, the project will need to include at least one Manager.*
 - d. *The seeding cost quote should not be reduced by the Indirect Rate.*
 - e. *Insufficient labor time and resources have been allotted for seed distribution.*
 - f. *The Indirect Cost rate of 39.6% is lower than should be used. In addition, a mobilization cost should be included in the Indirect Cost amount.*

Tyrone appreciates MMD's comments regarding the cost of reclamation and reseeding. In review of the costs, Tyrone disagrees with MMD's comments in regards to cost and the indirect rate. This project is minimal in scope, reflects Tyrone's experience in the local area as a result of multi million dollars' worth of construction, and was calculated based on third-party costs and standard cost estimating practices.

The reclamation activities will include ripping and seeding. Tyrone sees no reason to include the cost of a dozer and backhoe for this type of minor work. Drill sites will be bermed during construction to prevent any spills and stormwater runoff. Mud pits will be constructed prior to drilling and will only need to be covered when the drilling is done. This work will be completed before drilling progresses to the next location, which will maximize efficiency while preventing entrapment of livestock or wildlife. As a result, if a dozer or backhoe is needed, it will be used prior to moving to the next drill site. Tyrone will commit to completing this work before moving to the next drill location. This should suffice to address the agencies concern for financial assurance (FA) for this portion of the reclamation cost, and only the seeding portion will be left after the drilling project is concluded.

Due to time constraints and for FA purposes (at Emma) only, Tyrone has updated the FA estimate using the attached all-inclusive quote for reseeding cost, per acre. The updated reseeding cost is \$6,733.

2. *A drill hole abandonment cost estimate was not provided with the Application. Drill hole abandonment costs are required for minimal impact exploration permits where drilling is used. Attached is the MMD Guidance for Estimating Reclamation Costs for Part 3 Minimal Impact Exploration Permit Applications ("Guidance"). Please refer to the Guidance and calculate and provide MMD with proposed drill hole abandonment costs for the drill holes proposed in the Emma Exploration Project.*

Drill hole abandonment: Tyrone has attached an all-inclusive bid to abandon the drill holes. As you will see, this bid is significantly lower than MMD's estimated cost. Although Tyrone disagrees with your estimate, due to time constraints and for the purpose of FA calculations, Tyrone will agree to (for Emma), to provide FA for \$10.00 per foot (direct and indirect cost) for a total of (21 holes X 1,300 feet =27,300 total at \$10.00 per foot) \$273,000 dollars for Emma.

This cost is more than twice, the attached all-inclusive quote, for plugging and abandoning the Emma exploration drill holes and will be more than sufficient to cover any extraordinary cost that a government agency may incur if conducting work.

Comments of other Agencies

Response to Jeff Lewellin, NMED:

Tyrone has provided ground water total dissolved solids concentration information on the nearest wells to the project area we have (see attachment). For information that is more specific, please review our response to MMD's comments. Tyrone will abide by NMSOE requirements of plugging and abandoning all drill holes and will apply the standards to all holes regardless of encounter ground water. Tyrone does suspect that we will encounter ground water in all sites and have planned and already contracted for this work accordingly. All water encountered will be stored on site and contained in mud pits that will hold all water produced until the pit is covered and subsequently absorbed by surface soil, if it is not evaporated already.

Response to Jeff Money, NMED Surface Water Quality Bureau:

Tyrone Mine holds a National Pollutant Discharge Elimination System Multi-Sector General Permit (MSGP) under which earth-disturbing activities such as exploration drilling are covered. Tyrone Mine has addressed the potential for earth-disturbing activities to occur in its Stormwater Pollution Prevention Plan (SWPPP). As addressed in the SWPPP, Tyrone Mine will adhere to Section 8.G.4 of the MSGP to establish technology-based effluent limit controls and frequent inspections of the area in question.

No fuel, hydraulic oil, or other oils will be disposed of on the project area. Any spills will be immediately cleaned up and removed to an approved location for disposal. This information was included in our application.

Ground water sump pits will not be used for the disposal of anything but ground water. Further, no hazardous substances will be store or disposed of in ground water sump pits.

Ground water pits will be at least 100 feet from any drainage. Tyrone does not propose to line the pits as only ground water produced or drilling water is proposed to be stored in ground water sump pits.

Tyrone is committed to clean up any spills during all phases of this project and will have all appropriate supplies and materials on hand to clean any spill that may occur.

Tyrone will report any reportable spill to the New Mexico Environment Department (NMED) as well as any other regulating agency that we are required to report to under the regulations of this permit.

Response to Neal Butt, Environmental Analyst Control Strategies Section, Air Quality Bureau:

Tyrone is committed to adhere to all federal and state rules regarding air quality. Tyrone does not believe that our activities during this project will require any permits from either any state or federal agency.

Fugitive Dust:

As stated, there are no rules regulating fugitive dust. Tyrone concurs with the agencies recommendation and will take precautions, and if necessary, actions to prevent fugitive dust. This may include watering of roads and drill sites if necessary. This project is far enough away from any public road or residence that we do not anticipate any issues with traffic safety.

Response Matt Wunder, Ph.D. Chief, Ecological and Environmental Planning Division:

The New Mexico Game & Fish Department has recommended that Tyrone use a closed loop drilling system to avoid the need for a mud pit. Closed Loop systems are not conducive to the type of mineral testing that Tyrone is doing and thus are not an option for this work.

The department also recommends that Tyrone use a netting system over mud pits to prevent wildlife from entering the mud pits instead of the proposed plastic net fencing. Tyrone agrees that the netting may be a better barrier, but the threat of any wildlife entering into the mud pits is very low. First, the mud pits will only have water and drill cuttings that will not be toxic to wildlife and the only likely exposure would be wildlife becoming entangled or stuck in the mud. Second, because Tyrone's drilling program will be conducted during the height of our monsoon period if it is authorized by MMD in a timely manner, the presence of water at this time is abundant and the attraction to the mud pits will be minimal. Third, Tyrone will be working at these sites during the daylight hours and the presence of the contractor will likely provide enough disturbance to keep most wildlife away at least during working hours. Tyrone will commit to rescue and remove any entrapped wildlife from the mud pits and provide appropriate rehabilitation if necessary.

The department further recommends that Tyrone conduct a breeding bird survey if our work is conducted during the breeding season, which is May 1 - August 31, and stay at least 100 feet from any songbird nest and raven nest and 0.25 miles away from any raptor nest. Tyrone agrees with the recommendation to conduct a breeding bird survey in this application, and to avoid any active, non-abandoned nest, or engage a qualified biologist to remove and rehabilitate the young.

The department recommends that Tyrone use a different seed mix than the one proposed with some cool season grasses and native forbs. Further, the department recommends that Tyrone use only native seeds and preferably from local sources. Unfortunately, local seed is not available commercially and this area is a mixed grass/woodland that is not known to produce an abundance of forbs except in very wet winter and springs, which is rare in this area. Tyrone will accept the proposed seed mix emailed to Ty Bays on August 2, 2018 from David Otori.

In regards to disturbing native vegetation, we are committed to only disturb what is necessary to conduct our work.

Response to Steve Acheampong, Ph.D., Hydrologist, Hydrology Bureau:

Tyrone will plug all wells with a wet neat cement as dictated in the NMOSE Well Plugging Plan of Operations and provide a completed well log and plugging log as required by NMOSE. Tyrone concurs that the likelihood of encountering artesian water is not likely, but will notify NMOSE, if by chance we do, and include our findings in subsequent well and plugging logs.

Tyrone has already contracted this work with a company that has a licensed well driller on staff. Tyrone has included the name of the driller and their NM License number on the original application. Tyrone does not anticipate using any casing for this work. Tyrone's experience in this area has not required the use of casing for this type of work, but in the event that we do find the need to use casing, we will follow NMOSE recommendations. Tyrone will follow all NMOSE recommendations and regulations in performing plugging and abandonment of wells and will plug and abandon all wells prior to moving to the next drill site. It is expected that this project will be completed within a 45-60 day period from the time approval. All work, including plugging and abandonment, is expected to be done by the end of 2018 or sooner.

Drill Rig Fuels, Oils and Fluids:

Tyrone has described in the application that all fuels and fluids would be contained and cleaned up and reported accordingly to the appropriate authorities.

Response to Daniela Roth, Botany Program Coordinator EMNRD-Forestry Division:

1. Tyrone agrees that oats and yellow sweet clover are both non-native, but disagrees with the hypothesis that either of these plant species will become established. Both species are expected to germinate the first year to provide cover and for the perennial plants species in the seed mix. It is expected that the oats will only germinate in the first year and will not produce seed without artificial irrigation, and thus become non-existent by the second growing season after reseeding. The yellow sweet clover may be present for up to three growing seasons and then will likely be consumed by big game animals and domestic livestock, combined with the fact that native plant species will begin to outcompete it. The purpose of the yellow sweet clover is to provide cover for the seed and to aid in the reestablishment of nitrogen to the soil. Tyrone will accept the proposed seed mix emailed to Ty Bays on August 2, 2018 from David Ohori.

Response to Richard Reycraft, Staff Archaeologist, Department of Cultural Affairs Historic Preservation Division:

Tyrone disagrees with the recommendation to conduct an archaeological survey of the Emma Project area. There are no known sites in this location and a search of the area does not indicate any cultural sites in the project area. Further, this project will be conducted on private land owned by Tyrone, which is not subject to archaeological clearance prior to construction. However, Tyrone has internal policies in regards to cultural resources, which include the preservation of any archaeological or cultural sites encountered during construction. Tyrone will commit to stop any work and report to the proper authorities any human remains that are encountered. In addition, if any historic artifacts are discovered during construction, work will be stopped and evaluated as to how to avoid damage to the historic artifacts.

Mr. David Ohori
August 3, 2018
Page 7

Tyrone appreciates your timely review of this response letter. Attached is a table with the updated FA estimate. Should you have any questions or comments, please contact me at (575) 912-5757.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ty Bays', with a stylized, elongated flourish extending to the right.

Ty Bays
Senior Land and Water Resource Analyst

TRB
Attachments
20180803-100

2018 Revegetation Cost Estimate for Exploration Drilling				
Decription	Unit	Quantity	Unit Rate (\$/unit)	Total Cost (\$)
Revegetation Costs	acre	3.37	\$ 1,998	\$ 6,733
Plug and Abandon Exploration Drill Holes	ft	27,300	\$ 10	\$ 273,000
Total				\$ 279,733

Seed Mix: Pure Live Seed: Broadcast Mix

Percent Purity X Percent Germination = Pure Live Seed

	lbs/acre	seeds/lb	seeds/sqft
Blue Grama, <i>Bouteloua gracilis</i>	1	825000	18
Sideoats Grama, <i>Bouteloua curtipendula</i>	2	191000	8
Sand Dropseed, <i>Sporobolus cryptandrus</i>	0.25	5298000	30
Indian Ricegrass, <i>Achnatherum hymenoides</i>	2	141000	6
Purple Prairie Clover, <i>Dalea purpurea</i>	2	210000	9
Scarlet Globemallow, <i>Sphaeralcea coccinea</i>	1	500000	11
Winter Cover Crop of Triticale	10	13000	
Total Native	8.25		82
Total Cover Crop	10		



Revegetation/Reclamation
Rangeland Rehabilitation
Fencing
Hydroseeding
Environmental Consulting

ROCKY MOUNTAIN RECLAMATION

Phone (307) 745-5235
Fax (307) 745-5230

ron@reveg.us
www.reveg.us

P.O. Box 1695
Laramie, WY 82073

PRICING FOR REVEGETATION AND EROSION CONTROL SERVICES FOR THE

FREEPORT MCMORAN – CHINO MINE – TEST PLOT PROJECT - 2018

DATE: March 23, 2018

DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
<u>REVEGETATION INCLUDING MULCHING: **</u>				
1 Area Up to 10.0 Acres	10.00	Acres	\$19,980.00 LS	\$19,980.00
2 Area Over 10.0 Acres	Variable	Acres	\$1,447.00 /Ac.	Variable
				\$19,980.00

Completion Date: June, 2018

BID ASSUMPTIONS AND NOTES:

1. Prices include: seedbed preparation including scarifying and/or discing as needed, providing the seed mixture for drill seeding with the specified seed mixture utilizing our rangeland drill, certified noxious weed-free native grass hay mulching at 2.0 tons/acre, and crimping.
2. Price does not include: New Mexico Gross Receipts tax (will be added to our invoice as appropriate), scarifying compacted areas, topsoil, topsoil handling and grading, rock picking (available if requested at additional cost), watering, maintenance, weed spraying (available on a time and materials basis) warning signs, barriers, site protection, or *stand establishment warranty*. Native, dryland species often require several years (approximately 3) to fully establish. Contact us for more information if desired.
3. **HYDROSEEDING/HYDROMULCHING / TACKIFYING:** Hydroseeding/hydromulching are not included in the above pricing, but are available at additional cost and may be necessary if slopes are too steep or areas are inaccessible with our standard revegetation equipment. Slopes greater than 3:1 or areas inaccessible with our normal revegetation equipment may require hydroseeding and hydromulching. If hydroseeding/hydromulching are requested or required, our Hydromulching price assumes your Company provides water within 1.0 miles of the work areas at 300 gpm for 10 minutes once every 45 minutes (fire hydrant, pond, ditch, water truck, or similar). Tackifying can only be done in above freezing temperatures.

Additional Bid Assumptions and Notes on next page

ROCKY MOUNTAIN RECLAMATION

PRICING FOR REVEGETATION AND EROSION CONTROL SERVICES FOR THE

FREEPORT MCMORAN – CHINO MINE – TEST PLOT PROJECT - 2018

Page 2 of 2

4. RMR warrants workmanship and materials. Workmanship will equal or exceed industry standards and materials will be as specified and will be provided with material certifications.
5. Bond additional at 3.5% (\$350.00 minimum), if requested by your company.
6. The above prices assume the mine has provided measured pay quantities prior to RMR ordering materials and mobilizing to the project. Prices good for 10 days from date of bid.

Thank you for the opportunity to provide the above proposal to your company for revegetation and erosion control services. Please call if you have any questions or need additional information.

Ronald G. Schreiber

Rocky Mountain Reclamation
PO Box 1695
Laramie, WY 82073

July 31, 2018

To: David Princehouse
Tyrone Mining NM

Re: Abandonment of Exploration Holes

Layne intends to abandon the exploration holes drilled for Tyrone Mining for the RC Exploration program adhering to the following procedures

1. Upon reaching total depth the hole will be backfilled filling from the bottom up through the drill rods with a neat cement grout.
2. Verification of proper sealing is that the volume of sealing material placed in the hole during abandonment operations equals or exceeds the volume of the borehole to be filled and sealed

Regards



Audie Medhurst

General Manager, Mineral Exploration
Mineral Services Western US

LAYNE | water + mineral + energy

12030 E. Riggs Road | Chandler, AZ | 85249

Office: 602-824-0934 | Cell: 602-359-3010

audie.medhurst@layne.com | layne.com

MINERAL EXPLORATION



Layne Christensen Company

12030 E. Riggs Road
Chandler, Arizona 85249
Office: 480.895.9336
Fax: 480.895.9536

Estimate

WATER • MINERAL • ENERGY

Company: Freeport McMoRan Tyrone	Date: July 31, 2018
Contact: David Princehouse	Project: Tyrone Hole Abandonment
Address: Box 571 Hwy 90 South	Location: Tyrone Mine
City: Tyrone	Estimated By: Joel Campbell
State: NM	Proposal Number: 18-000-RC
Postal Code: 88065	Estimated Footage: 1,500 feet
Phone: 575 912 5752	Number of Holes: 1
Cell: 575 654 5246	Max. Depth: 1,500 feet
Email: dprinceh@fmi.com	Average Depths: 1,500 feet

Description	Quantity	Unit	Cost	Total
Mobilization and Moving				
Move Rig and Equipment	1	LS	\$5,000.00	\$5,000.00
De -Mobilize Rig and Equipment	1	LS	\$5,000.00	\$5,000.00
Move between holes 12hrs / move		HR	\$375.00	\$0.00
			Job Total	\$10,000.00
Abandon 1 x 5.5-inch Hole to 1,500 Feet				
Mix and Pump Cement Grout Whilst Pulling Rods	6	HR	\$375.00	\$2,250.00
Cement Materials	454	Bag	\$7.61	\$3,454.94
Sundry Materials Supplied - cost plus 15%				\$0.00
				\$0.00
				\$0.00
				\$0.00
			Total 1 Well	\$5,704.94



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.netFreeport McMoRan - Tyrone Mine
PO Box 10
Bayard, NM 88023Project Name: Tyrone Routine
Work Order: X7K0384
Reported: 12-Dec-17 11:55

Client Sample ID: 350011 : MB-15A

SVL Sample ID: X7K0384-03 (Water)

Sampled: 16-Nov-17 12:00

Received: 17-Nov-17

Sampled By: SH

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Aluminum	< 0.08	mg/L	0.08	0.04		X747039	AS	12/04/17 09:26	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.008		X747039	AS	12/04/17 09:26	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0008		X747039	AS	12/04/17 09:26	
EPA 200.7	Calcium	404	mg/L	0.100	0.040		X747039	AS	12/04/17 10:24	
EPA 200.7	Chromium	0.0184	mg/L	0.0060	0.0019		X747039	AS	12/04/17 09:26	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X747039	AS	12/04/17 09:26	
EPA 200.7	Copper	0.0146	mg/L	0.0100	0.0023		X747039	AS	12/04/17 09:26	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X747039	AS	12/04/17 09:26	
EPA 200.7	Magnesium	18.6	mg/L	0.20	0.10		X747039	AS	12/04/17 09:26	
EPA 200.7	Manganese	< 0.0080	mg/L	0.0080	0.0049		X747039	AS	12/04/17 09:26	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0027		X747039	AS	12/04/17 09:26	
EPA 200.7	Potassium	11.8	mg/L	0.50	0.19		X747039	AS	12/04/17 09:26	
EPA 200.7	Sodium	45.2	mg/L	0.50	0.17		X747039	AS	12/04/17 09:26	
EPA 200.7	Zinc	0.055	mg/L	0.010	0.003		X747039	AS	12/04/17 09:26	
Classical Chemistry Parameters										
SM 2320B	Total Alkalinity	9.3	mg/L as CaCO ₃	1.0			X747170	DKS	11/28/17 12:07	
SM 2320B	Bicarbonate	9.3	mg/L as CaCO ₃	1.0			X747170	DKS	11/28/17 12:07	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO ₃	1.0			X747170	DKS	11/28/17 12:07	
SM 2540 C	Total Diss. Solids	1720	mg/L	10			X747094	PRM	11/22/17 10:50	
Anions by Ion Chromatography										
EPA 300.0	Chloride	17.3	mg/L	10.0	6.00	50	X748160	SMB	12/05/17 13:16	D2
EPA 300.0	Fluoride	0.641	mg/L	0.100	0.052		X748160	SMB	12/05/17 13:00	
EPA 300.0	Sulfate as SO ₄	1170	mg/L	15.0	6.50	50	X748160	SMB	12/05/17 13:16	D2

Cation/Anion Balance and TDS Ratios

Cation Sum: 24.0 meq/L Anion Sum: 25.1 meq/L C/A Balance: -2.24 % Calculated TDS: 1673 TDS/cTDS: 1.03

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

John Kern
Laboratory Director

SVL holds the following certifications:

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

Work order Report Page 4 of 9



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Freeport McMoRan - Tyrone Mine
PO Box 10
Bayard, NM 88023Project Name: Tyrone Routine
Work Order: X7K0384
Reported: 12-Dec-17 11:55

Client Sample ID: 350014 : MB-44

SVL Sample ID: X7K0384-04 (Water)

Sampled: 16-Nov-17 11:20

Received: 17-Nov-17

Sampled By: SH

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Aluminum	< 0.08	mg/L	0.08	0.04		X747039	AS	12/04/17 09:29	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.008		X747039	AS	12/04/17 09:29	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0008		X747039	AS	12/04/17 09:29	
EPA 200.7	Calcium	127	mg/L	0.100	0.040		X747039	AS	12/04/17 10:27	
EPA 200.7	Chromium	< 0.0060	mg/L	0.0060	0.0019		X747039	AS	12/04/17 09:29	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0013		X747039	AS	12/04/17 09:29	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0023		X747039	AS	12/04/17 09:29	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.045		X747039	AS	12/04/17 09:29	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0052		X747039	AS	12/04/17 09:29	
EPA 200.7	Magnesium	14.0	mg/L	0.20	0.10		X747039	AS	12/04/17 09:29	
EPA 200.7	Manganese	0.0132	mg/L	0.0080	0.0049		X747039	AS	12/04/17 09:29	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0027		X747039	AS	12/04/17 09:29	
EPA 200.7	Potassium	2.07	mg/L	0.50	0.19		X747039	AS	12/04/17 09:29	
EPA 200.7	Sodium	28.5	mg/L	0.50	0.17		X747039	AS	12/04/17 09:29	
EPA 200.7	Zinc	< 0.010	mg/L	0.010	0.003		X747039	AS	12/04/17 09:29	
Classical Chemistry Parameters										
SM 2320B	Total Alkalinity	230	mg/L as CaCO ₃	1.0			X747170	DKS	11/28/17 12:14	
SM 2320B	Bicarbonate	230	mg/L as CaCO ₃	1.0			X747170	DKS	11/28/17 12:14	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO ₃	1.0			X747170	DKS	11/28/17 12:14	
SM 2540 C	Total Diss. Solids	556	mg/L	10			X747082	JDM	11/21/17 14:55	
Anions by Ion Chromatography										
EPA 300.0	Chloride	27.4	mg/L	2.00	1.20	10	X748160	SMB	12/05/17 13:47	D2
EPA 300.0	Fluoride	0.376	mg/L	0.100	0.052		X748160	SMB	12/05/17 13:31	
EPA 300.0	Sulfate as SO ₄	180	mg/L	3.00	1.30	10	X748160	SMB	12/05/17 13:47	D2

Cation/Anion Balance and TDS Ratios

Cation Sum: 8.79 meq/L Anion Sum: 9.14 meq/L C/A Balance: -1.93 % Calculated TDS: 517 TDS/cTDS: 1.07

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

John Kern
Laboratory Director

SVL holds the following certifications:

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

Work order Report Page 5 of 9

Site#	Latitude	Longitude	Elevation
1	32° 36' 42.57"	108° 21' 22.47"	6216
2	32° 36' 46.59"	108° 21' 18.42"	6202
4	32° 36' 54.35"	108° 21' 9.54"	6159
5	32° 36' 54.35"	108° 21' 12.55"	6170
7	32° 36' 54.51"	108° 21' 18.26"	6200
8	32° 36' 58.29"	108° 21' 8.78"	6182
9	32° 36' 58.43"	108° 21' 18.14"	6213
10	32° 36' 58.39"	108° 21' 13.39"	6185
11	32° 37' 2.41"	108° 21' 22.74"	6262
12	32° 37' 2.42"	108° 21' 18.08"	6269
13	32° 37' 5.72"	108° 21' 8.64"	6170
14	32° 37' 10.26"	108° 21' 13.22"	6224
16	32° 37' 2.32"	108° 21' 13.34"	6195
17	32° 37' 6.20"	108° 21' 13.20"	6193
18	32° 36' 42.58"	108° 21' 18.42"	6202
19	32° 36' 46.44"	108° 21' 13.67"	6194
25	32° 36' 49.98"	108° 21' 18.27"	6169
26	32° 37' 6.15"	108° 21' 3.92"	6145
27	32° 36' 58.20"	108° 21' 4.03"	6176
28	32° 37' 2.17"	108° 21' 4.00"	6172
23	32° 36' 49.94"	108° 21' 8.96"	6149

Tyrone Operations
June 1, 2009

