



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

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C.L. "Butch" Otter, Governor  
John H. Tippetts, Director

February 22, 2016

Mr. Justin Skinner  
Agrium Conda Phosphate Operations  
Environmental Coordinator  
PO Box 758  
Soda Springs, ID 83276

CORRECTED COPY

**Re: Point of Compliance Determination for the North Rasmussen Ridge Mine**

Dear Mr. Skinner:

Please find the enclosed the Idaho Department of Environmental Quality's (DEQ) Point of Compliance (POC) determination for the North Rasmussen Ridge Mine in response to your recent request. DEQ is setting this POC to establish the outer boundary where Idaho's ground water resources must comply with Idaho's Ground Water Quality Rule (GWQR).

The enclosed determination is divided into four parts. The introduction gives general background information along with an explanation of state authority for regulating ground water. The second part discusses the POC and indicator wells proposed as part of the original application. The third part speaks to additional POC wells DEQ has determined necessary to provide monitoring information to help ensure there is no injury to current or projected future beneficial uses of ground water or violation of surface water standards. The final section discusses the monitoring plan for the ground water wells.

The GWQR also allows for changes in point(s) of compliance based on new information or a change in mining activities (IDAPA 58.01.11.401.08). New information may include data from the required ground water monitoring, data from newly installed wells, and/or any changes to the mine operation and reclamation plan.

Please let me know if you have any questions. You may also contact Scott Miller to discuss POC implementation.

Sincerely,

A handwritten signature in blue ink, appearing to read "Butch", written over a blue ink stamp of the name "Bruce Olenick".

Bruce Olenick  
Pocatello Office Regional Administrator  
State of Idaho – Department of Environmental Quality

BO

e: Scott Donahoo - Agrium  
Ed Hagan - DEQ  
Douglas Tanner - DEQ  
Scott Miller - DEQ  
Gary Billman - IDL  
Matthew Wilson - U.S. Forest Service

## **Introduction**

The North Rasmussen Ridge Mine (NRRM) is located on Federal Phosphate Lease I-07619, portions of Federal Phosphate Lease I-04375 and a portion of State of Idaho Lease 9313. A Final Environmental Impact Statement and Record of Decision for the mine were issued in 2003. Active mining occurred in 2003 to 2005 and 2008 to present. Surface water and ground water investigations, required under the 2003 Record of Decision, resulted in the identification of potential environmental impacts. Mitigation measures, such as the replacement of high seleniferous fill material with lower seleniferous material over alluvium at the pit margins (low-seleniferous wings), construction of surface water management controls, panel B redesign, and panel A cover redesign, were evaluated and mine plan modifications were proposed by Agrium and approved by the Bureau of Land Management in 2012, 2013, and 2015.

The Idaho Ground Water Quality Rule (IDAPA 58.01.11.401) allows a mine operator of a new or expanding mine to request the Department of Environmental Quality (DEQ) set point(s) of compliance (POC) at which the mine operator must meet ground water quality standards as described in IDAPA 58.01.11.200. Agrium submitted a POC application for NRRM on September 09, 2015. The application was determined to be complete by DEQ as expressed in a letter to Agrium dated October 05, 2015.

In their application, Agrium proposed the use of existing and new monitoring wells to monitor any possible off-site releases of contaminants in the alluvial, Dinwoody Formation and Wells Formation ground water flow systems. Three existing and four new wells were proposed as POCs for these three ground water flow systems.

## **Proposed Points of Compliance and Indicator Wells**

DEQ accepts the following proposed monitoring well locations as POC wells, except as noted:

- MW-SA1 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- MW-NA1 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- MW-RA23 - DEQ agrees with the location and use of this proposed well as an alluvial POC.
- MW-ND16 - DEQ agrees with this location and the use of the existing well as a Dinwoody Formation POC.
- MW-RD22 - DEQ agrees with use of this proposed new well as a Dinwoody Formation POC; however, DEQ has deemed the location be moved to approximately 42° 54' 53.3 north latitude, 111° 25' 28 west longitude.
- MW-SD24 - DEQ agrees with the use of this proposed well as a Dinwoody Formation POC; however, DEQ has deemed the location be moved to approximately 42° 54' 00.390 north latitude, 111° 24' 10 west longitude, near the intersection of West Fork Sheep Creek and the mining lease boundary.

- MW-RW21 - DEQ agrees with the use of this proposed well as a Wells Formation POC; however DEQ has deemed the location be moved to approximately 42° 54' 53.9 north latitude, 111° 25' 38 west longitude.

DEQ has determined additional wells are also necessary to adequately monitor the ground water flow systems at NRRM. These wells and their approximate proposed locations (Figure 1) are as follows.

- MW-SA25 - This POC well is to be located adjacent to MW-SD24 and is to be completed in the first encountered water in the alluvium. This well will monitor ground water quality in the alluvial ground water system between the mine and West Fork Sheep Creek.
- MW-NA26 - This POC well is to be located adjacent to MW-ND27 between the mine and No Name Creek and near the southern boundary of NRRM (42° 53' 23.9 north latitude, 111° 23' 46 west longitude). The well is to be completed in the first encountered water in the alluvium. This well is to assure there are no unacceptable ground water impacts to No Name Creek and to the alluvial flow system down hydraulic gradient of this well.
- MW-ND27 - This POC well is to be located adjacent to MW-NA26 (42° 53' 23.8 north latitude, 111° 23' 46 west longitude) and is to be completed in the first encountered water in the Dinwoody Formation. As there is very little known about the Dinwoody or Rex Chert aquifers in this area the well will be designed to detect any off-site impacts to the Dinwoody ground water flow system.
- MW-NW28 – This POC well is to be located at approximately 42° 53' 21.7 north latitude, 111° 24' 16 west longitude south of the pit and completed in first encountered ground water in the Wells Formation regional aquifer system. The well will monitor the effectiveness of site best management practices in conjunction with MW-NW19, -RW18, and -RW21; verify and monitor ground water flow directions in the regional aquifer and assure regional ground water quality is maintained south of the mine.
- Existing Rex Chert monitoring wells MW-RR12 and -SR14 and Well Formation monitoring wells MW-NW19, -RW18, and -SW15 will be used as indicator wells to verify the conceptual site model and the numerical modeling efforts. Based upon future data from these wells Agrium or DEQ may request additional POC(s).

Agrium will provide DEQ with daily activity reports during well drilling and installation activities. Daily activity reports should include the drilling progress, type of materials encountered (geologic formations), water encountered and approximate depth, unexpected conditions, and any other information that may aid DEQ in evaluating the well. Daily reports are to be sent to [scott.miller@deq.idaho.gov](mailto:scott.miller@deq.idaho.gov).

### **New POC Well Work Plan and Installation Schedule**

A well installation work plan and schedule for the new POC wells shall be provided to DEQ no later than April 29, 2016 for approval. It is the intent of DEQ that all wells will be installed by September 30, 2016. The work plan will specify approximate new well locations, installation, and development procedures. Exact well locations will be determined during a well siting visit

with DEQ staff in attendance, when conditions on Rasmussen Ridge permit. Following installation of the wells, Agrium shall provide a well completion report (well lithology, construction details, completion logs, sampling/development record, coordinates and elevation in a readily accessible coordinate system, etc.) for inclusion in the first annual report following installation of the well(s).

### **POC well background, indicator well baseline and projected water quality report**

Agrium submitted a background ground water quality analysis for all currently active monitoring wells at the NRRM as Appendix H of the POC application. The analysis is currently under review by DEQ; comments on the analysis or approval of background values will be submitted under a separate letter.

Agrium will submit a background ground water quality report for all new POC wells by March 1, 2020 for DEQ review and approval. The report will outline the methodology used to develop background conditions for ground water quality unimpacted by mining activity at each of the new POC wells and provide background concentration limits for field pH, sulfate, TDS, turbidity, nitrate, and each analyte listed under the Metals heading on Table 5-4 in the North Rasmussen Ridge Mine Surface Water and Groundwater Monitoring Plan<sup>1</sup> or the most current approved ground water monitoring plan. Table 5-4 has been reproduced in the attachment for convenience. Until background concentration limits are approved for each of the new POC wells an inter-well approach with values approved by DEQ will be used for determining compliance to the GWQR. Development of site background water quality will follow DEQ's statistical guidance<sup>2</sup> or other statistical methods for determining background as approved by DEQ.

For the background determination please note:

- DEQ will allow for the existing POC and indicator wells to be used to establish site background/baseline water quality, determined on a well by well basis, until such a time a well is deemed by DEQ to be impacted by Agrium's mining activities.
- A minimum of 12 samples from each well, over a three year-period is expected to be collected with a sampling frequency of no greater than once a month, preferably four times annually, for the development of site background/baseline water quality.
- In addition, Agrium shall provide the maximum predicted naturally occurring contaminant concentrations, which over time, pass through the POCs.

Once the dataset is achieved and DEQ has approved the background/baseline concentration limits, sampling of these wells will then be included into the Bureau of Land Management-approved Surface Water and Groundwater Monitoring Plan<sup>1</sup> sampling schedule.

### **Data Summary Notice**

If data indicate DEQ approved degradation limits or ground water quality standards have been exceeded during a sampling event a data summary notice will be prepared and submitted to DEQ

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<sup>1</sup>Brown and Caldwell 2015. North Rasmussen Ridge Mine, Surface and Groundwater Monitoring Plan, October.

<sup>2</sup>DEQ, 2014. Statistical Guidance for Determining background Ground Water Quality and Degradation, March.

no later than 60 days after the last sample is collected during a particular field event (e.g., monthly, quarterly, spring, fall). The summary will include all data collected during the event and notification of any ground water quality standard exceedance or degradation of ground water quality not approved by DEQ.

### **Ground Water Monitoring Plan**

Ground water monitoring will be conducted as approved under the Surface Water and Groundwater Monitoring Plan.

### **Annual Report**

An annual report is due on or before March 31 of each year for the preceding year. The report is to include a summary of data collected the prior year including discussion, especially of any anomalous or unexpected data, and all available validated water quality data from all POC and baseline wells in an electronic, easily editable format such as Excel or Access files. Identification of any possible data gaps, or unanticipated changes in water quality or site conditions, should also be presented and discussed. As such, DEQ will determine based upon the information submitted, Agrium's compliance with ground water quality standards and the effectiveness of the best management practices for the mine activities. The report shall identify proposed or approved background/baseline concentrations for constituents identified as water analysis parameters. Agrium shall also include a well completion report for all wells drilled during the reporting cycle.

### Constituents to monitor

The analytes listed in the Surface Water and Groundwater Monitoring Plan (Table 5-4<sup>1</sup>) will be monitored for each sampling event and reported annually. Analytes may be removed or added to the list after a written request from Agrium or governing Agency and agreement between all parties or at the request of DEQ.

### Monitoring schedule

Below is the initial monitoring schedule based on type of well and amount of data previously collected.

Well	Well Type	Completion (hydro stratigraphic unit)	Sampling events* (through 2013)	Monitoring schedule
MW-SA1	POC	Alluvium	17	Semiannual
MW-NA1	POC	Alluvium	18	Semiannual
MW-RA23	POC	Alluvium	0	Four annually <sup>€</sup>
MW-SA25	POC	Alluvium	0	Four annually <sup>€</sup>
MW-NA26	POC	Alluvium	0	Four annually <sup>€</sup>
MW-ND16	POC	Dinwoody	17	Semiannual
MW-RD22	POC	Dinwoody	0	Four annually <sup>€</sup>
MW-SD24	POC	Dinwoody	0	Four annually <sup>€</sup>
MW-ND27	POC	Dinwoody	0	Four annually <sup>€</sup>
MW-SR14	Indicator	Rex Chert	13	Semiannual
MW-RR12	Indicator	Rex Chert	13	Semiannual
MW-NW19	Indicator	Wells	10	Semiannual
MW-RW18	Indicator	Wells	10	Semiannual
MW-SW15	Indicator	Wells	13	Semiannual
MW-RW21	POC	Wells	0	Four annually <sup>€</sup>
MW-NW28	POC	Wells	0	Four annually <sup>€</sup>

\*Constituents sampled may have varied by sampling event.

<sup>€</sup>Sampling may be conducted more frequently if needed.

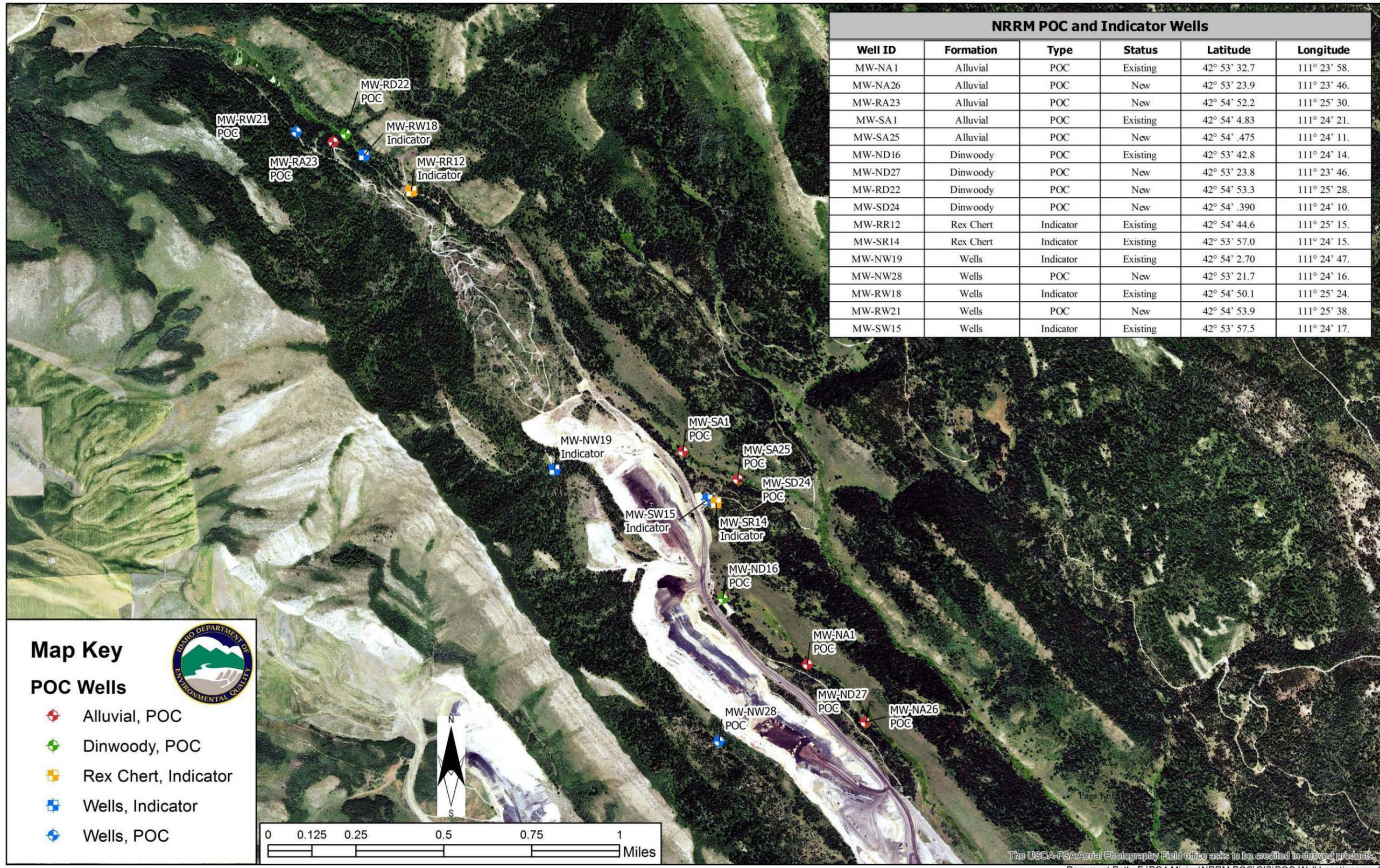


Figure 1. North Rasmussen Ridge Mine Point of Compliance Wells

**ATTACHMENT**

**Table 5-4. Groundwater Analytical Suite and Applicable Idaho Groundwater Quality Standards**

Parameter	Analytical Method	Analytical Limits <sup>1</sup> (MDL/PQL) (mg/L)	Analytical Basis	Primary Groundwater Standard (mg/L)	Secondary Groundwater Standard (mg/L)
<b>Major Ions/ Wet Chemistry</b>					
Alkalinity, total (mg CaCO <sub>3</sub> /l)	SM2320B	2.5/20	Total	— <sup>2</sup>	—
Alkalinity, carbonate (mg/l)	SM2320B	2.5/20			
Alkalinity, bicarbonate (mg /l)	SM2320B	2.5/20	Total	—	—
Alkalinity, hydroxide (mg /l)	SM2320B	2.5/20			
Chloride (mg/l)	EPA 300.0	3.0/5	Dissolved	—	250
Fluoride (mg/l)	EPA 300.0	0.1/0.5	Dissolved	4.0	—
Hardness (as CaCO <sub>3</sub> ) (mg/l)	Calculated	1.6/7	Dissolved	—	—
Nitrogen, nitrate+nitrite (mg/l)	EPA 353.2	0.02/0.1	Dissolved	10.0	—
pH, Laboratory (s.u.)	SM4500H+B	0.1/0.1	N/A	—	6.5 to 8.5
Sulfate (mg/l)	EPA 300.0	0.5/3	Dissolved	—	250
TSS (mg/l)	SM2540D	5/20	Total	—	—
TDS (mg/l)	SM2540C	10/20	Dissolved	—	500
Cation-Anion Balance	Calculated	N/A	Total	—	—
<b>Metals</b>					
Aluminum (mg/l)	EPA 6020A	0.002/0.005	Total/Dissolved	—	0.2
Antimony (mg/l)	EPA 6020A	0.0004/0.002	Total/Dissolved	0.006	—
Arsenic (mg/l)	EPA 6020A	0.0005/0.002	Total/Dissolved	0.05	—
Cadmium (mg/l)	EPA 6020A	0.0001/0.0005	Total/Dissolved	0.005	—
Calcium (mg/l)	EPA 6010C	0.2/1	Total/Dissolved	—	—
Iron (mg/l)	EPA 6010C	0.02/0.05	Total/Dissolved	—	0.3
Lead (mg/l)	EPA 6020A	0.0001/0.0005	Total/Dissolved	0.015	—
Magnesium (mg/l)	EPA 6010C	0.2/1	Total/Dissolved	—	—
Manganese (mg/l)	EPA 6010C	0.005/0.03	Total/Dissolved	—	0.05
Potassium (mg/l)	EPA 6020A	0.3/2	Total/Dissolved	—	—
Selenium (mg/l)	EPA 6020A	0.0001/0.0005	Total/Dissolved	0.05	—
Sodium (mg/l)	EPA 6010C	0.3/2	Total/Dissolved	—	—
Zinc (mg/l)	EPA 6010C	0.01/0.05	Total/Dissolved	—	5.0
<b>Field Parameters</b>					
pH	Field	N/A	N/A		6.5 to 8.5
DO (mg/l)	Field	N/A	N/A	—	—
Turbidity (NTU)	Field	N/A	N/A	—	—
ORP	Field	N/A	N/A	—	—
Specific conductivity (µmhos/cm)	Field	N/A	N/A	—	—
Temperature (°C)	Field	N/A	N/A	—	—

Notes:

<sup>1</sup>MDL = method detection limit; PQL = practical quantitation limit.

<sup>2</sup>— = A standard has not been developed for this constituent.

Brown and Caldwell 2015. North Rasmussen Ridge Mine, Surface and Groundwater Monitoring Plan, October.