Appendix 32-10 : Quality Assurance / Quality Control Plan

AGNICO EAGLE

MELIADINE GOLD MINE

Quality Assurance/Quality Control Plan

APRIL 2022
VERSION 4
6513-QQY-01

EXECUTIVE SUMMARY

This document presents the Meliadine Mine Quality Assurance/Quality Control (QA/QC) Plan, a requirement of the Meliadine Type A Water License No. 2AM-MEL1631, specified under Part I, Item 17:

> *The Licensee shall implement a Quality Assurance / Quality Control Plan, as accepted by the Board under Part B, Item 12. This Plan shall be maintained in accordance with current Standard Standard Methods and the 1996 Quality Assurance (QA) and Quality Control (QC) Guidelines for Use by Class "A" Licensees in Meeting SNP Requirements (INAC).*

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DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	April 2015			This is the first version of this Plan, developed for the Type A Water Licence Application	Golder Associates Ltd.
2	March 2018	All	All	-Updated revision date	Meliadine Environment Department
		2.1	3	-Changed Hanna multi-meter to Eureka Manta II	
		2.2.4	6	-Laboratory name change: MultiLab to H2Lab	
		Table A-2	Appendix 12	-Updated table of analytical parameters (removed Group listing)	
		Figure A-2		-Removed figure heading for site sampling location – no figure was included with the heading	
		Figure A-1	Appendix 16	-Added General Site Plan figure to existing heading	
3	March 2019			Reviewed internally (added changes that the construction phase brought and review of the grammatical tense)	Meliadine Environment Department
		Executive Summary	Ii	Additional INAC information added to executive summary	
		Table A-1	A-2, A-3	Updated GPS Coordinates	
		Figure A-1	A-5	Updated Site Map	
4	April 2022	All	All	General Plan Update	Meliadine Environment Department

ACRONYMS

AEMP	Aquatic Effects Monitoring Program
Agnico Eagle	Agnico Eagle Mines Limited
CALA	Canadian Association for Laboratory Accreditation
CIRNAC	Crown-Indigenous Relations and Northern Affairs
COC	Chain of Custody
DDH	Diamond Drill Hole
EM	Event Monitoring
IOL	Inuit Owned Land
MDMER	Metal and Diamond Mining Effluent Regulations
Mine	Proposed Meliadine Gold Mine
NWB	Nunavut Water Board
Project	Meliadine Gold Project
QA/QC	Quality Assurance and Quality Control
SNP	Surveillance Network Program

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Gold Mine (the Mine), located approximately 25 kilometres (km) north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson's Bay, the Mine is located on a peninsula (the Peninsula) between the east, south, and west basins of Meliadine Lake (63°01'23.8"N, 92°13'6.42"W), on Inuit Owned Land (IOL).

This report presents the Quality Assurance/Quality Control (QA/QC) Plan for the Mine. The Plan was prepared in accordance with the requirements of Type A Water Licence Application and the Supplementary Information Guidelines for Mining and Water Works, issued by Nunavut Water Board (NWB 2010a, b, c). It has been developed in accordance with the Aboriginal Affairs and Northern Development Canada (AANDC) 1996 '*Guidelines for Use by Class "A" Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan*', which includes the following definitions:

- Quality Assurance: the system of activities designed to better ensure that quality control is done effectively; and
- Quality Control: the use of established procedures to achieve standards of measurement for the three principal components of quality – precision, accuracy and reliability.

This QA/QC Plan, which is part of the Environmental Management System for the Mine, is divided into the following components:

- Procedures for field sample collection (Section 2);
- External and internal laboratory requirements (Section 3); and
- Data verification procedures and regulatory reporting requirements (Section 4).

The objective of the QA/QC program is to ensure that the chemical data collected are representative of the material being sampled, are of known quality, are properly documented, and are scientifically defensible. Data quality is assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of accredited laboratories, and by staffing the program with experienced technicians.

This QA/QC Plan sets out standard procedures for sample and data collection with respect to environmental sampling carried out at the Mine (such as surface water, groundwater, air, soil, operational filtered tailings and waste rock) in support of monitoring programs outlined in the Water Management Plan, Groundwater Management Plan, Aquatic Effects Monitoring Program (AEMP) Design Plan, Air Quality Monitoring Plan and Mine Waste Management Plan.

It should be noted the present QA/QC plan is more specific to water quality monitoring; detailed QA/QC procedures for other monitoring programs are presented in the respective Management Plans as well as in Agnico Eagle's Geochemical Characterization Guide.

SECTION 2 • FIELD SAMPLING

Water quality monitoring was initiated at the pre-development stage and will continue during construction, operations, and closure. Sampling stations, frequency, and parameters are listed in Appendix A. The stations and their requirements may be adjusted based on the requirements of the Type A Water Licence and/or any updates to the relevant management plans over the life of the Mine.

There are four categories of monitoring at Meliadine. They include water quality monitoring but also other media such as soil, air, operational filtered tailings and waste rock:

- **Regulated discharge monitoring** occurs at monitoring points specified in the Water Licence or MDMER. It includes discharge water quality limits that must be achieved to maintain compliance. Enforcement action may be taken if discharge limits are exceeded for a parameter.
- **Verification monitoring** is carried out for operational and management purposes by Agnico Eagle. This type of monitoring provides data for decision making and builds confidence in the success of processes being used. There is no obligation to report verification monitoring results, although some monitoring locations and these results can be mentioned in environmental management plans (i.e., sampling to verify soil remediation in the landfarm).
- **General monitoring** is commonly included in a water licence specifying what is to be monitored according to a schedule. It covers all types of monitoring (i.e., geotechnical, lake levels, etc.). This monitoring is subject to compliance assessment to confirm sampling was carried out using established protocols, included QA/QC provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the Water Board.
- **Event Monitoring** addresses the site-specific monitoring that is required following any accidental release. The EM program is designed to verify whether contamination of the surface soil and/or any nearby receiving environment and active zone has occurred as a result of an accidental release of a hazardous material or contaminated water. A “release” may be caused by spills, unidentified seepage or emergencies.

All sampling stations are clearly identified; their GPS coordinates collected and stored. All sampling is conducted by qualified personnel, at the same location (sampling stations), using the same techniques to reduce operational error. The following sections outline the standard procedures for collection and handling of all surface water and groundwater samples.

2.1 Sampling Equipment

New laboratory supplied containers are used for sample collection. The bottles are either polyethylene plastic or glass, dependent on the specific parameter being analyzed.

Equipment, such as the HACH test kit – 2100 Q Portal Turbidimeter (turbidity), YSI (pH, dissolved oxygen, temperature and conductivity), and Eureka Manta II (pH, dissolved oxygen and conductivity) are handheld instruments that are used to collect, as required, field parameters. The instruments are calibrated as per the manufacturer's recommendations and before compliance sampling. Records of the calibration are kept in a Calibration log and subsequently uploaded to the Mine's database. Maintenance procedures will be followed as set out by the supplier's operation manual. Equipment and bottles are selected so that they do not contaminate or alter the concentrations of parameters of interest according to laboratory standards.

To collect water samples at depth from the surrounding lake receiving environments, a pump with Low Density Polyethylene tubing is used. Filters and syringes provided by the laboratory are used to filter water for specific analyses (e.g., dissolved metals) while ashless filter paper are used for filtering samples prior to analyses conducted on depth integrated sampling (e.g., chlorophyll *a*, phytoplankton).

2.2 Sampling Methods and Handling

2.2.1 Sampling Identification

All samples have a unique sample identification name based on a station identifier, date, and time of collection. For duplicates and field blanks, the sample identification follows the naming convention, followed by "DUP" (for duplicate), "FB" for field blank, "TB" for travel blank or "EB" for equipment blank.

All sample bottles are identified with the sample identification and date of collection. This information is marked on a label with a water-resistant pen or using a label printer and affixed to the sample bottle. Additional information (time of sampling and parameters to analyze) is included in the analysis request (Chain of Custody (COC)) that is sent to the chosen laboratory, accredited by the Canadian Association for Laboratory Accreditation (CALA).

2.2.2 Surface Water Sampling

Bottles are pre-labeled with the required sample identification before going to the field. Surface grab samples are collected by submerging the sample bottle below the surface of water.

Samples bottles are provided by the accredited laboratory. All bottles from the lab are pre-rinsed and pre-preserved or pre-rinsed with vials of preservative that are added in the field by qualified technicians. In the case that bottles are not pre-preserved; bottles are rinsed three times with sample water before filling. When the sampling bottles contain preservative, the bottles are filled by using another clean bottle to avoid any release of preservative. Sometimes, a preservative is added after filling as directed by the laboratory; see Section 2.2.4 for more details on preservation. The bottles are filled properly to allow mixing, preservative addition, and thermal expansion.

Samples analyzed for dissolved metals and chlorophyll *a* are filtered (with syringe and filter provided by the laboratory/ash less filter paper) at the time of collection when the delay before analyses is long. However, when the delay before analyses is short, the accredited laboratory filters the sample before analyses. In some cases, when the analysis delay is long, the sample will be frozen to prevent parameter degradation.

2.2.3 Groundwater Sampling

Water samples taken from sumps within the Underground Mine follow the procedures outlined in Section 2.2.2.

Samples representing non-contact groundwater are collected via Diamond Drill Holes (DDHs) intersecting the fracture network. In order to ensure samples are unaffected by substances and materials used during the drilling process, DDHs are flushed thoroughly prior to collecting. The duration of a flush is based on the length of the DDH and rate of groundwater flow measured at its collar. These values are matched to flush-duration curves provided by Golder Associates.

Groundwater samples are collected in clean 4L and 1L containers. In order to minimize the impact of potential contamination from the atmospheric conditions in the underground mine, the 4L sample is transferred to bottles of smaller volume for all the parameters to be analyzed once brought to surface. This is done in a clean laboratory environment where the risk of sample contamination is greatly decreased. Samples are processed and preserved in an appropriate timeframe after collection.

2.2.4 Preservation for water samples

Preservatives, if required, are added to sample bottles by the laboratory or added by the technician after filling, as directed by the analytical laboratory. Table A-3 summarizes the minimum sample volumes, preservation, and holding times for select parameters. This information was provided by the CALA certified laboratory H2Lab (formerly MultiLab) for the Meadowbank Mine; however, they are also applicable to the Meliadine Mine.

Table 0-1: Summary of Sampling Requirements

Parameters	Matrix				Type of Bottle	Preservative	Volume
	Drinking Water	Waste Water	Surface Water	Ground Water (1)			
Microbiology							
Escherichia coli, total coliforms, A.A.H.B	48h	48h	48h	48h	PPS	TS, E	250ml
Enterococcus	48h	48h	48h	48h	PPS	TS, E	250ml
Thermo tolerant coliforms (fecal)	48h	48h	48h	48h	PPS	TS, E	250ml
Inorganic Chemistry							
Absorbance UV, Transmittance UV				24h	P. T. V	N	125ml
Alkalinity, Acidity, Bicarbonates, Carbonates	14d	14d	14d	14d	P, T, V	N	250ml
Ammonia nitrogen (NH_3-NH_4)	28d	28d	28d	28d	P, T, V	AS	125ml
Kjeldahl ammonia (NTK)		28d	28d	28d	P, T, V	AS	125ml

Anions (Cl, F,SO_4)	28d	28d	28d	28d	P, T, V	N	250ml
Color, Free & total Chlorine	48h	48h	48h	48h	P, T, V	N	125ml
Conductivity	28d	28d	28d	28d	P, T, V	N	250ml
Cyanides total/available, Cyanides	14d	14d	14d	14d	P, T, V	NaOH	250ml
BOD_5/Carbonated BOD_5 (2)		48h/4°	48h/4°		P, T, V	N	250ml
COD (chemical oxygen demand)		28d	28d		P, T, V	AS	125ml
Mercury (Hg)	28d	28d	28d	28d	P, T, V	AN	250ml
Total/dissolved metals (filtered on field)	180d	180d	180d	180d	P, T, V	AN	250ml
Dissolved Metals (filtered in the laboratory)	24h	24h	24h	24h	P, T, V	N	250ml
Total suspended solids & Volatile TSS		7d	7d	7d	P. T. V	N	500ml
NH_3 or NH_4		24h	24h	24h	P.T.V	N+AS	2/125ml
Nitrites (NO_2), Nitrates (NO_3), Turbidity	48h	48h	48h	48h	P, T, V	N	250ml
Nitrites-Nitrates (NO_2-NO_3)	28d	28d	28d	28d	P, T, V	AS	250ml
O-Phosphates (O-PO_4)	48h	48h	48h	48h	P, T, V	N	500ml
pH	24h	24h	24h	24h	P, T, V	N	125ml
Total Phosphorus (P-tot)	28d	28d	28d	28d	P, T, V	AS	125ml
Dissolved solids (TDS)		7d	7d	7d	P. T. V	N	250ml
Total solids		7d	7d	7d	P. T. V	N	250ml
Sulphides (H_2S) (3)	28d	28d	28d	28d	P. T. V	AcZn + NaOH	125ml
Thiosulfates	48h	48h	48h	48h	P. T. V	N	125ml
Radioactive & Organic Chemistry							
Fatty resin acids (S-T)	--	28d	28d	--	VA, VT	AS	1L
Congeners PCB (S-T)	28d	28d	28d	28d	VA, VT	N	1L
Chlorobenzene	28d	28d	28d	28d	2 Vial+1 blank	TSS	2/40ml
Total Organic Carbon (TOC)	28d	28d	28d	28d	P, T, V (B)	AC	100ml
Dissolved Organic Carbon (DOC)	48h	48h	48h	48h	P, T, V (B)	N	100ml
Total Inorganic Carbon (CIT)	48h	48h	48h	48h	P, T, V (B)	N	100ml
Phenolic compound (GC-MS)	28d	28d	28d	28d	VA, VT	AS	1L
Glyphosate (S-T)	14d	14d	14d	14d	P.T	N	500ml
PAH	28d	28d	28d	28d	VB	AS	1L
Oil & Greases (total and non-polar)	28d	28d	28d	28d	VA, VT	AS	1L
C10-C50 HP and/or Petroleum Product Identification	28d	28d	28d	28d	VA, VT	AS	1L
Phenol index	28d	28d	28d	28d	VA, VT	AS	500ml
Radium-226	180d	180d	180d	180d	P, T. V	AN	1L
VOC (MAH, CAH, THM, BTEX) (3)	28d	28d	28d	28d	2 Vial+1 blank	TSS	2/40ml

Type of bottle:
P.S.V.T.: plastic bottle, bag or glass bottle with Teflon cap
P, T: Plastic bottle or plastic bottle with Teflon cap
P.T.V.: Plastic bottle or glass bottle with plastic or Teflon cap
PPS: Sterile propyl ethylene bottle
VA: Clear or amber glass with aluminium or Teflon seal
VB: Amber glass (or clear glass covered with aluminium paper) aluminium seal of Teflon
VT: Clear or amber glass bottle with Teflon seal
Preservative:
AC: 0.1ml (100µl) of HCl per 100ml of sample
AcZn: 0.2ml zinc acetate 2N per 100ml of sample and NaOH 10N to pH >9

AN: HNO3 to pH <2
AS: H2SO4 to pH <2
E: 2.5ml EDTA 1.5% (p/v) per 100ml of sample if heavy metals are suspected
ED: 0.1ml diamine ethylene 45 mg/l per 100 ml of sample
EDTA: 1ml EDTA 0.25M per 100ml of sample
N: No preservative
NaOH: NaOH 10N to >12
TS: Sodium thiosulfate final concentration in the sample of 0.1% (p/v)

2.2.5 Field Duplicates and Blanks

A field blank is a sample prepared in the field using laboratory-provided deionized water to fill a set of sample containers, which is then submitted to the laboratory for the same analysis as the field water samples. Field blanks are used to detect potential sample contamination during collection, shipping and analysis.

A travel blank is a sample prepared and preserved at the analytical laboratory prior to the sampling trip using laboratory-provided deionized water. The sample remains unopened throughout the duration of the sampling trip. Travel blanks are used to detect potential sample contamination during transport and storage.

An equipment blank is a sample of distilled water run through the equipment and placed in sampling bottles for analysis of a wide suite of parameters, collected at the beginning or end of a field sampling episode, after routine rinsing of the pump and tubing. This sample tests for possible cross-contamination of samples from the water sampling equipment.

Duplicate samples are two samples collected from a sampling location using identical sampling procedures. They are labelled, preserved individually and submitted for identical analyses. Duplicate samples are used to assess consistency in sampling methodology and heterogeneity of chemical parameters at discrete locations.

One field duplicate and one field blank are collected for approximately every 10 samples. Travel and equipment blanks for monitoring programs are used as detailed in the respective Management Plans.

2.2.6 Sample Transport

All water samples are stored upright in coolers with ice packs and preserved as specified by the laboratory. Samples are to be shipped to the external laboratory as soon as possible via Nolinor Charter flight and dedicated ground transportation to minimize sample hold time. If the sample (sediments, soil and water) cannot be shipped the same day, they are to be stored in a refrigerator at approximately 4°C until shipping. Care is taken when packaging samples for transport to the laboratory to maintain the appropriate temperature (between 4°C and 10˚C) and minimize the possibility of rupture.

A Chain of Custody (COC) form with the following information is completed for every shipment of samples:

- Company name and sampler's name;
- Sample identification name;
- Time and date of sampling;
- Presence and type of preservative and whether the sample was filtered or not;
- Requested analytical parameters for each bottle;
- Time and date of shipping; and
- Analytical laboratory address and contact person.

One electronic or PDF copy will be sent by email to the laboratory which is also kept in the Mine site's records for reference. Another copy travels with the samples.

SECTION 3 • LABORATORY ANALYSIS

3.1 External Laboratory

All analytical chemistry analyses are performed by a CALA accredited laboratory. All data from the CALA laboratories undergoes a rigorous internal QA/QC process, including the use of spiked samples and duplicate samples.

In most cases, water quality analyses are performed by Bureau Veritas Laboratories (BV Labs), an accredited facility located in Nepean (ON). Toxicity tests will be performed by AquaTox Testing & Consulting in Puslinch, (ON) – who subcontracts some of the testing to Harris Industrial Testing Service Ltd in Waverley (NS) and Nautilus Environmental in Burnaby (BC) – and BV Labs in Burnaby (BC). Testing will be conducted as stipulated by Environment Canada's Biological Test Methods.

Agnico Eagle may also require the services of other laboratories, such as BV Labs in Edmonton (AB), ALS in Burnaby (BC) or Winnipeg (AB), SGS in Lakefield (ON) and H2Lab in Val d'Or (QC).

3.2 Internal Laboratory

Some analyses are carried out internally with equipment available at the Mine site for verification monitoring. It is used periodically for "real-time" results for some parameters such as total suspended solids and total ammonia. These results are for observational purposes and do not meet the standards of an accredited laboratory.

SECTION 4 • DATA REQUIREMENTS

4.1 Data Collection

A database of all water sampling data is maintained at the Mine site. The database accounts for the various discharge limits designated in the Water License and the MDMER. The database functionality includes event scheduling, trend analysis, and flagging out-of-compliance samples, all to enhance the effectiveness of the QA/QC program.

The following data is collected for each sample in the field and is entered into the database by the sampler for the corresponding sampling station:

- Sample identification name;
- Name of sampler;
- Date and time of sampling or measurement; and
- Physico-chemical parameters (pH, temperature, dissolved oxygen, conductivity, etc.), when applicable.

The sample results from the laboratory are input into the database and matched to the sample identification name. The analysis certificate for each sample from the accredited laboratory includes but is not limited to:

- Analytical methods or techniques used;
- Date of analysis;
- Report Detection limit;
- Quality Assurance Report;
- Name of the person(s) / laboratory that approved the certificate; and
- Results of any analysis.

4.2 Data Verification

Upon receipt of analytical results, the blank and duplicate analyses are verified for potential contamination and accuracy, respectively. Results are interpreted and recommended actions are taken if necessary.

4.3 Exceedance Reporting

Any measured concentration at a sample station exceeding a regulated discharge criterion stipulated in the Water License or the MDMER are reported to the Nunavut Water Board (NWB), Environment Canada and Climate Change (ECCC), and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) water inspector as per Water Licence 2AM-MEL1631. In addition, results of the action plan, where required, is reported and, where necessary, mitigation options identified within 30 days after the exceedance notification is sent.

SECTION 5 • REFERENCES

AANDC (Aboriginal Affairs and Northern Development Canada). 1996. Quality Assurance (QA) and Quality Control (QC) Guidelines for Use by Class “A” Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan.

NWB (Nunavut Water Board). 2010a. Guide 4: Completing and Submitting a Water Licence Application for a New Licence. April 2010.

NWB. 2010b. Supplemental Information Guideline (SIG) for General Water Works (M1). Issued February 2010.

NWB. 2010c. Supplemental Information Guideline (SIG) for Mine Development (MM3). Issued February 2010.

APPENDIX A • TABLES AND FIGURES

Table A-1: Water Quality Monitoring Stations

Station	Description	Phase	Monitoring Parameters	Frequency
Mine Site				
MEL-D-1 to TBD	Dewatering: Water transferred from lakes to Meliadine Lake during dewatering of lakes	Construction	As defined in the Water Management Plan referred to in Part D, Item 12	Prior to discharge and Weekly during discharge
			Volume (m3)	Daily during periods of discharge
MEL-SR-1 to TBD	Surface Runoff: runoff downstream of Construction areas at Meliadine Site and Itivia Site, Seeps in contact with the roads, earthworks and any Runoff and/or discharge from borrow pits and quarries	Construction, and Operation	As defined in the Water Management Plan referred to in Part D, Item 18	Prior to Construction, Weekly during Construction
			Group 1	Monthly during open water or when water is present upon completion
MEL-11	Water Intake from Meliadine Lake	Construction, Operation, and Closure	Full Suite	Monthly during periods of intake
			Volume (m^3)	Daily during periods of intake
MEL-12	Contact Water Treatment Plant (pre-treatment) coming from CP1, off the pipe and not in the pond	Construction (prior to release), Operations, and Closure	Group 1	Monthly during periods of discharge
MEL-13[(a)] (and AEMP Stations)	Mixing zone in Meliadine Lake and MDMER exposure stations for final discharge point within mixing zone	Construction (prior to release), Operations, and Closure	Full Suite, Group 3 (MDMER)	Monthly during periods of discharge
MEL-14	Contact Water Treatment Plant from CP1 (post-treatment): end of pipe in the plant before offsite release	Construction (upon effluent release), Operations, and Closure	Full Suite, Group 3	Prior to discharge and Weekly during discharge

			Volume (m3)	Daily during periods of discharge
			Acute Lethality	Once prior to discharge and monthly thereafter
MEl-15	Local lake E-3	Operations, and Closure	Group 2	Bi-annually during open water
MEL-16	Local Lake G2	Construction, Operations, and Closure	Group 2	Bi-annually during open water
MEL-17	Local Pond H1	Construction, Operations, and Closure	Group 2	Bi-annually during open water
MEL-18	Local Lake B5	Construction, Operations, and Closure	Group 2	Bi-annually during open water
MEL-19	CP2, Collection of drainage from WRSF3	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-20	CP3 Collection of drainage from dry stacked tailings	Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-21	CP4 Collection of drainage from WRSF1	Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-22	CP5 Collection of drainage from WRSF1 and WRSF2	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-23	CP6 Collection of drainage from WRSF3	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-24	Seepage from the Landfill between the landfill and Pond H3	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-25	Secondary containment area at the Itivia Site Fuel Storage and Containment Facility	Construction, Operation, Closure	Group 4, Volume (m3)	Prior to discharge or transfer of Effluent

MEL-26	Melvin Bay end of pipe (before offsite release) for treated saline effluent	Operations, and Closure	MDMER	As per MDMER requirements

Table A-2: List of Analytical Parameters

Group	Parameters
1	pH, turbidity, hardness, total alkalinity, sodium, magnesium, potassium, calcium, chloride, fluoride, silicate, sulphate, total dissolved solids (TDS; calculated[a,b]), total suspended solids (TSS), total cyanide, ammonia nitrogen, nitrate, nitrite, phosphorus, orthophosphate, Total Metals (aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc).
2	**Total and Dissolved Metals**: aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, and zinc. **Nutrients**: ammonia-nitrogen, total Kjeldahl nitrogen, nitrate-nitrogen, nitrite-nitrogen, orthophosphate, total phosphorus, total organic carbon, dissolved organic carbon, and reactive silica. **Conventional Parameters**: bicarbonate alkalinity, chloride, carbonate alkalinity, turbidity, conductivity, hardness, calcium, potassium, magnesium, sodium, sulphate, pH, total alkalinity, TDS (calculated[a,b]), TSS, total cyanide, free cyanide, and weak acid dissociable (WAD) cyanide..
3	**MDMER parameters**: total cyanide, arsenic, copper, lead, nickel, zinc, radium-226, TSS, pH, total ammonia and temperature. **MDMER additional requirements**: Effluent volumes and flow rate of discharge, Acutely Lethality tests (Rainbow Trout and Daphnia magna) and environmental effects monitoring (EEM).
4	Total arsenic, total copper, total lead, total nickel, TSS, ammonia, benzene, toluene, ethylbenzene, xylene, total petroleum hydrocarbons (TPH), and pH
Full Suite	Group 2, Total Petroleum Hydrocarbons, Turbidity. Non Acutely-lethal (Rainbow Trout and Daphnia magna) for discharge only.
Flow	Flow data-logger
Field measurements	Field pH, specific conductivity, dissolved oxygen, and temperature.

[(a)]Standard Methods (Method 1030E, American Public Health Association (APHA) 2012. Standard Methods for the Examination of Water and Wastewater, 22nd Edition, with updates to 2015.)
[(b)]TDSCalc (mg/L) = (0.6 x Total Alkalinity as CaCO3) + Sodium + Magnesium + Potassium + Calcium + Sulfate + Chloride + Nitrate + Fluoride + Silicate

MDMER = Metal and Diamond Mining Effluent Regulations.