Appendix F: Hope Bay Project 2023 Effluent Monitoring Reports

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Canada

Hope Bay Project - Annual effluent monitoring report - Version 1 - 2023

Report details

Facility name	Hope Bay Project
Reporting period	2023
Version	1
Status	Submitted
Last modified	2024/01/11 09:00 (MST)
Submission date	2024/01/11 11:52 (MST)

Parent company

Parent company	Physical address
Agnico Eagle Mines Limited	400, 145 King, Street, East, Toronto, Ontario, M3C 2Y7, Canada

History

Status	Version	Last modified	Submission date
Submitted	1	2024/01/11 09:00 (MST)	2024/01/11 11:52 (MST)

Identifying information

Reporting period	**2023**
Facility name	**Hope Bay Project**
Facility physical address	**Cambridge Bay, Nunavut, X0B 0C0, Canada**
Operator name (required)	Agnico Eagle Mines Limited
Operator telephone number	8197593555
Operator extension	4600102
Operator e-mail address	guy.dufour@agnicoeagle.com

Note	Date	User name
No data available		

Test results

Final discharge point **RBD-1**

Final discharge point latitude **68.17699**

Final discharge point longitude **-106.63707**

Monthly mean concentrations, pH and volume of effluent

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra-226 (Bq/L)	NH_3 [1] (mg/L expressed as nitrogen (N))	Lowest pH	Highest pH	Effluent volume (m^3)
Jan	0.0007	0.0046	0.0403	0.0004	0.0088	0.0285	6.96	0.016	0.0047	7.36	7.84	44107
Feb	0.0009	0.0046	0.0325	0.0016	0.0077	0.0315	14.9	0.0175	0.0081	7.43	7.64	42255
Mar	0.0018	0.0088	0.0082	0.0015	0.0114	0.0658	8.625	0.0225	0.0076	7.34	7.86	49052
Apr	0.0008	0.0047	0.0061	0.0264	0.0056	0.0294	9.9	0.0175	0.0057	7.45	7.75	47221
May	0.0015	0.0121	0.0051	0.0049	0.0076	0.0423	1.56	0.0126	0.006	7.56	8.01	105328
Jun	0.0007	0.0051	0.0069	0.0006	0.01	0.0452	3.475	0.0225	0.0082	7.66	8.02	55714
Jul	0.0004	0.0045	0.0025	0.0001	0.0085	0.0317	1	0.009	0.0117	7.79	8.05	27856
Aug	0.0007	0.0069	0.0043	0.0002	0.0103	0.0318	2.5	0.0197	0.0087	7.58	7.76	85627
Sep	0.0017	0.0153	0.0025	0.0008	0.0133	0.0097	1.25	0.011	0.0057	8	8.07	257592
Oct	0.0019	0.0135	0.0025	0.0014	0.0076	0.014	1.725	0.0066	0.0049	8.09	8.19	258574
Nov	0.0021	0.0131	0.0031	0.0001	0.0088	0.0075	1	0.0054	0.0027	7.7	8.07	288102
Dec	0.0019	0.0135	0.01	0.0002	0.0108	0.0094	1	0.0034	0.0015	7.26	7.93	271280

[1]Note: The monthly mean concentration for un-ionized ammonia is calculated for collection dates as of June 1st, 2021.

Results of acute lethality tests

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
2023/01/10 11:35			0%
2023/02/07 11:20			0%
2023/03/07 10:30			0%

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
2023/04/04 12:10			0%
2023/05/02 15:05			0%
2023/06/06 13:35			0%
2023/07/04 17:15			0%
2023/07/15 08:30	0%		
2023/08/01 20:00	0%		0%
2023/08/18 16:25	0%		
2023/09/05 14:50	0%	0%	
2023/10/03 16:55	0%	0%	
2023/10/10 16:55		0%	
2023/10/19 10:00	0%		
2023/11/01 06:50	0%	0%	
2023/12/06 05:25	0%	0%	

If effluent was non-compliant with the authorized limits set out in Schedule 4, or if the pH was less than 6.0 or greater than 9.5, or if effluent was determined to be acutely lethal, indicate the cause(s) of non-compliance and remedial measures that are planned or have been implemented.

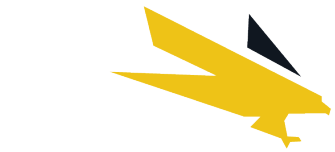
Non-compliance information

An Acartia Tonsa acute lethality test failure was observed on the sample taken on July 04, 2023. No deleterious substances exceedances occurred. Discharge was subsequently halted on July 15, 2023, until the effluent could be proven to not be acutely lethal. Discharge was resumed on August 01, 2023, and increased monitoring was observed per MDMER requirements, with the final increased monitoring sample being taken on

August 18, 2023, at which point regular acute lethality monitoring resumed. The final Acartia Tonsa reporting form for 2023 was submitted to the sdem-mers@ec.gc.ca e-mail address at the same time as this report.

Hope Bay

2023 EEM Annual Report Addendum



AGNICO EAGLE
HOPE BAY

PREPARED BY:
AGNICO EAGLE MINES LIMITED – HOPE BAY DIVISION

MARCH 2024

Section 1. Introduction

In 2023, Agnico Eagle continued effluent discharge to Roberts Bay using the final discharge point RBD-1. Discharge of effluent at this final discharge point (FDP) began on January 1, 2023, and was continued throughout the remainder of 2023.

RBD-1 is registered on MERS and is a sample port located on the discharge pipeline in the 730 pumphouse building (location 68.17699, -106.63707) upstream from the end of the pipeline, prior to discharge to Roberts Bay. A ball valve in this sample port is used to collect samples of effluent. Effluent is pumped and discharge to Roberts Bay through a single sunken pipeline and diffuser located offshore. The effluent stream consists of water collected from contact water ponds, saline water from the Doris underground mine and excess water in the reclaim pond of the tailings impoundment area. RBD-1 is the only registered FDP located at Hope Bay.

On August 25, 2023, ECCC regulators were informed that the underwater diffuser for the end of line discharge had become unexpectedly detached. Similarly to the situation in 2021 when the diffuser was detached, discharge was continued and repairs to the line are planned in 2024.

All effluent characterization data, sublethal toxicity results and water quality monitoring data at exposure and reference areas for samples collected in 2023 has been entered in the 2023 ‘Information related to effluent and water quality monitoring studies’ submitted on MERS. Laboratory Certificates of Analysis for these samples have been uploaded to the ‘Methodologies & QA/QC measures and data’ page on MERS. It should be noted that extra effluent characterization samples were taken during 2023 as part of the increased frequency monitoring requirements after failing an Acartia Tonsa acute lethality test. These results are included and identified in the ‘Information related to effluent and water quality monitoring studies’ report.

This report is an addendum to information submitted on MERS and summarizes sampling methodology and QAQC measures implemented for the EEM monitoring program as per MDMER Schedule 5 Part 1 Section 8.

Section 2. Sampling Methodology

Section 2.1 Effluent Characterization

In 2023, nine effluent characterization samples were collected at RBD-1. Results of effluent characterization sampling have been reported electronically on MERS and laboratory Certificates of Analysis for these samples have been uploaded to the Effluent Characterization section of the 'Methodologies & QA/QC measures and data' page on MERS.

All samples for the Effluent Characterization were collected by experienced technicians using standardized operating procedures.

Effluent characterization samples for RBD-1 are collected from a ball valve on the discharge pipeline located within the 730 pumphouse building (location 68.17699, -106.63707) prior to effluent entering the submerged section of the discharge pipeline in Roberts Bay.

When sampling at the FDP, technicians open the ball valve on the sample port and let water run for approximately 3 minutes prior to sample collection in order to clear the line. The technicians put on clean nitrile gloves which are worn at all times during sample collection. Sample bottle labels are completed with the date and time the sample is collected. Bottles are filled one at a time following the rinse and fill guidelines outlined by the contracted laboratory.

Once filled, preservatives are added to bottles when required, as outlined by the contracted laboratory. Sample bottles and preservatives used in effluent characterization samples include:

- 125mL bottle unpreserved for metals (excluding mercury)
- 40mL vial unpreserved for mercury
- 3 x 250mL bottle unpreserved for hardness, alkalinity, conductivity, chloride, sulphate and nitrate
- 100mL bottle preserved with sulfuric acid for ammonia and total phosphorus
- 60ml bottle preserved with sodium hydroxide for total cyanide
- 2 x 1000 ml bottle preserved with nitric acid for radium-226

Field measurements including pH, temperature, electrical conductivity and salinity are collected at the time of the sampling using calibrated field meters.

Samples are stored in a cooler with icepacks and shipped to the laboratory for analysis. A Chain of Custody (COC) form is emailed to the laboratory and a hard copy of the COC form is included in the cooler used to ship samples.

Efforts are made to ship the sample to the contracted laboratory within 24 hours of sample collection. However, in 2023 flight availability from the site to the contracted laboratories was limited due to the availably of commercial flights. This did impact arrival times at the contracted laboratory and subsequently hold times for Nitrate and TSS analyses for the April 04 and July 15, 2023, samples were affected.

The effluent characterization samples taken on July 4, July 15, August 01, and August 18 were taken to comply with the increased monitoring requirements after an acute lethality test failure on the aliquot taken on July 04, 2023. As per regulatory requirements, quarterly effluent characterization samples were taken, coinciding with sublethal toxicity testing dates, on February 07, April 04, July 12, September 05, and November 08. The July 12 sublethal toxicity sample was initiated without the required 16-hour period

being respected after the salt adjustment due to test species availability. As a result, a further test was carried out on September 05.

Section 2.2 Sublethal Toxicity Testing

RBD-1 is the only active FDP located at Hope Bay, therefore sublethal toxicity sampling is conducted on effluent discharged at this FDP as outlined in Schedule 5 Parts 5 and 6 of the MDMER.

In 2023, five sublethal toxicity sample were collected at RBD-1. As mentioned previously, the July 12 sublethal toxicity sample was initiated without the required 16-hour period being respected after the salt adjustment due to test species availability. As a result, a further test was carried out on September 05, 2023. The same test method deviation occurred on the sample.

Results of sublethal toxicity sampling have been reported electronically on MERS and the laboratory Certificates of Analysis for these samples have been uploaded to the Sublethal Toxicity test section of the 'Methodologies & QA/QC measures and data' page on MERS.

Samples collected for the Sublethal Toxicity Testing were collected by experienced technicians using standardized operating procedures. The technicians put on clean nitrile gloves which are worn at all times during sample collection.

Sublethal toxicity samples are collected immediately after the effluent characterization sample from the sample port on the discharge pipeline located within the 730 pump house building (location 68.17699, -106.63707) prior to effluent entering the submerged section of the discharge pipeline in Roberts Bay.

Two clean 1L HDPE bottles are filled with effluent from the sample port. No preservatives are used for these samples. Both bottles are placed in a cooler with icepacks and shipped to the laboratory for analysis. A Chain of Custody (COC) form is emailed to the laboratory and a hard copy of the COC form is included in the cooler used to ship samples to the contract laboratory.

Efforts are made to ship the sample to the contracted laboratory within 24 hours of sample collection. However, in 2023, transport options from the site to Nautilus Environmental Labs in Burnaby, BC were limited due to the commercial availability of flights, as was laboratory species availability due to importing constraints encountered by the lab. This did impact the hold times of the February 07 and April 04 samples at the contract laboratory and subsequently the sublethal toxicity test methodology deviated from the 3-day hold time outlined in the test methods.

Section 2.3 Water Quality Monitoring at Exposure and Reference Areas

Water quality monitoring samples for the exposure (RB-EXP) and the reference (RB-REF) areas were collected from the locations stipulated in the ECCC MERS system.

This monitoring included *in situ* measurements of temperature, dissolved oxygen, conductivity, and pH, and collection of water quality samples at three depths (5 m, 35 m and 39 m) at each of the exposure and reference locations. Depth measurements could vary based on the maximum depth of the sampling location. The lowest measurement was always taken 1m above the sea-floor.

Water quality sampling events were conducted on August 02 and September 05, 2023. The initial September sample had been planned for September 04, 2023, and was cancelled due to safety concerns resulting from high winds. The equipment blank was therefore taken on September 04, 2023, prior to halting the sampling attempt, and the remaining field samples were taken on the following day on

September 05, 2023. Roberts Bay remains ice covered during a large portion of the year, with ice-out occurring in early July, and ice cover returning in mid-October. Water quality sampling commenced as soon as conditions were safe following ice-out and subsequent sampling events were conducted a minimum of one month apart.

Since discharge proceeded throughout winter, sample attempts were evaluated and ultimately abandoned due to safety concerns related to ice thickness and ice-water rescue capabilities on site.

Results of water quality monitoring at the exposure and reference areas have been reported electronically on MERS and the laboratory Certificates of Analysis for these sample has been uploaded to the Water Quality Monitoring Data section of the 'Methodologies & QA/QC measures and data' page on MERS.

All samples for the Water Quality Monitoring were collected by experienced technicians using standardized operating procedures. The technicians put on clean nitrile gloves which are worn at all times during sample collection.

Water samples are collected from a boat at the sample location using a niskin sampler lowered to the specified depth using the metered rope. Sample bottles are filled from the spout of the niskin sampler and preservatives are added to bottles when required, as outlined by the contract laboratory. Sample bottles and preservatives used in water quality monitoring samples include:

- 3 x 250mL bottle unpreserved for hardness, alkalinity, pH, conductivity, total suspended solids, chloride, sulphate and nitrate
- 100mL bottle preserved with sulfuric acid for ammonia and total phosphorus
- 125mL bottle unpreserved for metals (excluding mercury)
- 40mL vial unpreserved for mercury
- 60mL bottle preserved with sodium hydroxide for total cyanide
- 2 x 1000 ml bottle preserved with nitric acid for radium-226
- 125ml bottle unpreserved for ultra-trace mercury

Field measurements including temperature, dissolved oxygen, conductivity, salinity and pH are collected at the time of the sampling using calibrated field meters.

Samples were stored in a cooler with icepacks and shipped to the laboratory for analysis. A Chain of Custody (COC) form is emailed to the laboratory and a hard copy of the COC form was included in the cooler used to ship samples to the contract laboratory.

Efforts are made to ship the sample to the contract laboratory within 24 hours of sample collection. However, in 2023 transport options from the site to the contracted laboratories was limited due to the to commercial flight availability. This did impact arrival times at the contract laboratory and subsequently hold times for Nitrate analyses for the August 02, 2023 samples and the equipment blank sample taken on September 4, 2023 were affected.

Section 3. QAQC Methodology

The main objective of the quality assurance and quality control (QAQC) measures are to outline a set of operating principles, that if strictly followed during sample collection and analysis, will produce data of known and legally defensible quality.

QAQC methodology for chemical parameters and toxicity testing are outlined in Section 3.1. QAQC data related to implementation of the QAQC methodology are presented in Section 3.2.

Section 3.1 QAQC Measures

QAQC measures implemented during the EEM sampling program include:

- Utilizing standard procedures for sample collection, preservation, documentation and transportation, to achieve precision, accuracy and reliability in data quality;
- All personnel involved in sampling and analysis are trained and competent;
- Utilize high quality laboratory supplies and sampling equipment that are reliable and maintained in good working condition; and
- Ensure that all chemical analyses are conducted at a certified external laboratory.

All chemical analyses, with the exception of radium-226 analyses, were performed by ALS Environmental, split between their Edmonton (AB), Calgary (AB), Vancouver (BC) and Waterloo (ON) laboratories. All Radium-226 analyses were carried out by the Saskatchewan Research Council. Quality control (QC) samples are introduced into batches of client samples at critical points of sample handling, preparation and analysis to demonstrate the processes are performing as expected. This includes the use of method blanks, lab sample duplicates and matrix spikes. All QAQC data passed the laboratories acceptable limits, except for the following samples:

- April 04, 2023, effluent characterization sample – A lab duplicate for total phosphorus was outside the data quality objective and had a variation greater than 2 times the Limit of Reporting (LOR). Additionally, the frequency for lab quality control samples was outside the specified range for nitrates.
- July 12, 2023, effluent characterization sample – A matrix spike outlier occurred on the total selenium analysis and showed a greater recovery than the upper data quality objective.
- August 02, 2023, water quality at exposure and reference area sample – The method blank for conductivity result exceeded the permitted value.

The laboratory Certificates of Analysis, including Quality Control Reports, have been uploaded to the ‘Methodologies & QA/QC measures and data’ page on MERS.

Nautilus Environmental Company Inc. in Burnaby, BC performed all sublethal toxicity tests. Testing was conducted as outlined in the test methodologies specified in Schedule 5 Part 1 Section 5(2). QAQC measures implemented by the lab, including reference toxicant, met acceptable limits. The reference toxicant test, which was carried out for the February 04, 2023, sample fell outside the 2 standard deviations of historical mean, but inside 3 standard deviations. Per the laboratory, one in twenty data points could fall outside of the range based on the organism’s variability and it was concluded that the

sensitivity of the organism used in the test was appropriate. QAQC data is presented with the toxicity report which has been uploaded to the 'Methodologies & QA/QC measures and data' page on MERS.

Two (2) Multi-Parameter meters were used to record field measurements (pH, conductivity, dissolved oxygen, salinity and temperature). The equipment was calibrated by technicians prior to each use. The Multi-Parameter calibration data is presented in Table 3.3 and Table 3.4.

The niskin sampler used to collect water quality samples at exposure and reference areas is cleaned using laboratory grade soap and then triple rinsed with a 10% solution of nitric acid followed by deionized water to reduce any potential contamination between sampling events.

Equipment blanks are collected after cleaning of field equipment and prior to sampling. De-ionized water provided by the contract laboratory is used to triple rinse the equipment. The field equipment is then filled with de-ionized water, and then collected and preserved in new sample bottles for the same analysis as the field samples. Two (2) equipment blanks were collected for the program in 2023.

Field blanks are samples of laboratory-grade deionized water that are subjected to the same procedures as routine field samples. New sample bottles were rinsed as directed by the contract laboratory and filled using deionized water provided by the contract laboratory to replicate the grab sample methodology. Bottles were preserved using the same protocol as the regular samples and submitted to the contract laboratory for analysis. Two (2) field blanks were collected for the program in 2023.

Travel blanks are prepared by the analytical laboratory with de-ionized water and appropriate preservative. The travel blank bottles are shipped to site, transported to the field, carried through the sample collection and shipped back to the laboratory with the field samples. One (1) travel blank was collected for the program in 2023.

Duplicate samples are prepared by collecting a separate sample for each given analytical parameter at the sample location. The duplicate samples are collected, handled, and analyzed using the same procedure applied to the routine sample. Duplicate samples are analyzed by the same analytical method in the laboratory. Two (2) duplicate samples were collected for the program in 2023.

Duplicate results were assessed using the relative percent difference (RPD) between the analytical results and the duplicate. The equation used to calculate RPD is:

$$\mathrm{RPD} = \frac{\mathrm{A} - \mathrm{B}}{\frac{\mathrm{A} + \mathrm{B}}{2}} \times 100 \qquad (3.1.1)$$

where A = analytical result; B = duplicate result

Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are low and approaching the detection limit. Consequently, a RPD of 20% for concentrations of analytical and duplicate samples that both exceed 10x the method detection limit (MDL) is considered notable. The analytical precision of one QAQC sampling event is characterized as:

- High, when less than 10% of the parameters have variations that are notable;
- Medium, when 10 to 30% of the parameters have variations that are notable;
- Low, when more than 30% of the parameters have variations that are notable.

Section 3.2 QAQC Data

Results of the QAQC samples are presented in Table 3.1 and Table 3.2.

All field blanks were at or near laboratory method detection limits (4x the DL). Equipment blank results were at or near laboratory method detection limit except for chloride, nitrate and total phosphorus in the August 02, 2023, sample (4x the DL).

In 2023, one sample parameter for the nitrate test carried out on September 05, 2023, sample exceeded the 20% RPD for which the parent and duplicate samples are above 10x the MDL. The ammonia test for the same sample also gave an RPD above 20%, however the sample wasn't above the 10x MDL and was not counted as a notable deviation. The total number of notable variations resulted in 3.70% of tests having notable variations. No tests carried out on the August 02, 2023, samples exceeded the 20% RDP objective, meaning that 0% of the tests carried out had notable variations. As a result, the analytical precision is rated high for both the August 02, 2023, sample and the September 5, 2023, sample as less than 10% of the parameters had notable variations. This indicates that data quality is sufficient to meet the objectives of the monitoring program.

Table 3.1 August 2023 QAQC Monitoring

Water Quality Monitoring Studies (RBD-1)								
Parameter	**Sample Date**		**2023-08-02**					
	Unit	**MDL**	**Equipment Blank**	**Field Blank**	**Travel Blank**	**Duplicate**	**Original**	**RPD**
Physical Tests								
Conductivity	uS/cm	2.0	2.0	2.0	2.0	38200	38600	1.04
Hardness (as CaCO3)	mg/L	0.50	0.50	0.50	0.50	5740	5730	-0.17
pH	pH	0.1	4.67	4.91	4.75	7.73	7.72	-0.13
Suspended Solids	mg/L	2.0	2.0	2.0	2.0	2.0	2.0	0.00
Anions and Nutrients								
Alkalinity, Total (as CaCO3)	mg/L	1.0	1.0	1.0	1.0	95.1	95.1	0.00
Ammonia, Total (as N)	mg/L	0.0050	0.0577	0.0050	0.0050	0.0050	0.0050	0.00
Chloride (Cl)	mg/L	0.50	0.50	0.50	0.50	13800	13700	-0.73
Nitrate (as N)	mg/L	0.0050	**0.0850**	0.0050	0.0050	0.500	0.500	0.00
Phosphorus (P)-Total	mg/L	0.0010	**0.0063**	0.0010	0.0010	0.0305	0.0309	1.30
Sulfate (SO4)	mg/L	0.30	0.30	0.30	0.30	1800	1780	-1.12
Cyanides								
Cyanide, Total	mg/L	0.0050	0.0100	0.0100	0.0100	0.0100	0.0100	0.00
Total Metals								
Aluminum (Al)-Total	mg/L	0.0030	0.0030	0.0030	0.0030	0.150	0.150	0.00
Arsenic (As)-Total	mg/L	0.00010	0.00010	0.00010	0.00010	0.0050	0.0050	0.00
Cadmium (Cd)-Total	mg/L	0.0000050	0.0000050	0.0000050	0.0000050	0.000250	0.000250	0.00
Chromium (Cr)-Total	mg/L	0.00050	0.00050	0.00050	0.00050	0.00500	0.00500	0.00
Cobalt (Co)-Total	mg/L	0.00010	0.00010	0.00010	0.00010	0.00500	0.00500	0.00
Copper (Cu)-Total	mg/L	0.00050	0.00050	0.00050	0.00050	0.0250	0.0250	0.00
Iron (Fe)-Total	mg/L	0.010	0.010	0.010	0.010	0.500	0.500	0.00
Lead (Pb)-Total	mg/L	0.000050	0.000050	0.000050	0.000050	0.00250	0.00250	0.00
Manganese (Mn)-Total	mg/L	0.00010	0.00010	0.00010	0.00010	0.00500	0.00500	0.00
Mercury (Hg)-Total	ug/L	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.00
Molybdenum (Mo)-Total	mg/L	0.000050	0.000050	0.000050	0.000050	0.00755	0.00828	9.22
Nickel (Ni)-Total	mg/L	0.00050	0.00050	0.00050	0.00050	0.0250	0.0250	0.00
Selenium (Se)-Total	mg/L	0.000050	0.000050	0.000050	0.000050	0.00250	0.00250	0.00
Thallium (Tl)-Total	mg/L	0.000010	0.000010	0.000010	0.000010	0.000500	0.000500	0.00
Uranium (U)-Total	mg/L	0.000010	0.000010	0.000010	0.000010	0.00232	0.0024	3.39
Zinc (Zn)-Total	mg/L	0.0030	0.003000	0.003000	0.003000	0.15	0.15	0.00
% Exceedances *								**0%**

Footnotes:
RPD = Relative Percent Difference; MDL = Mean Detection Limit
Result below DL were considered as the value of the DL for the RPD calculation
** Percentage of parameters exceeding the QA/QC objectives for the sampling event, which corresponds to grey shaded cells.*
Bold values correspond to a significant blank result above 4 times the detection limit.

Table 3.2 September 2023 QAQC Monitoring

Water Quality Monitoring Studies (RBD-1)							
Parameter	**Sample Date**		**2020-09-05**				
	Unit	**MDL**	**Equipment Blank**	**Field Blank**	**Duplicate**	**Original**	**RPD**
Physical Tests							
Conductivity	uS/cm	2.0	2.0	2.0	28700	29600	3.09
Hardness (as CaCO3)	mg/L	0.60	0.60	0.60	4800	4730	-1.47
pH	pH	0.1	4.94	5.08	7.89	7.88	-0.13
Suspended Solids	mg/L	2.0	2.0	2.0	2.0	2.0	0.00
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	mg/L	1.0	1.0	1.0	89.7	89.3	-0.45
Ammonia, Total (as N)	mg/L	0.0050	0.0096	0.0050	0.0050	0.0091	**58.16**
Chloride (Cl)	mg/L	0.50	0.50	0.50	13900	13900	0.00
Nitrate (as N)	mg/L	0.0050	0.026	0.0050	1.1	2.07	**61.20**
Phosphorus (P)-Total	mg/L	0.050	0.050	0.050	2.50	2.50	0.00
Sulfate (SO4)	mg/L	0.30	0.30	0.30	1940	1930	-0.52
Cyanides							
Cyanide, Total	mg/L	0.0050	0.0050	0.0050	0.0054	0.0050	-7.69
Total Metals							
Aluminum (Al)-Total	mg/L	0.0030	0.0030	0.0030	0.150	0.150	0.00
Arsenic (As)-Total	mg/L	0.00010	0.00010	0.00010	0.00500	0.00500	0.00
Cadmium (Cd)-Total	mg/L	0.0000050	0.0000050	0.0000050	0.000250	0.000250	0.00
Chromium (Cr)-Total	mg/L	0.00050	0.00050	0.00050	0.0250	0.0250	0.00
Cobalt (Co)-Total	mg/L	0.00010	0.00010	0.00010	0.00500	0.00500	0.00
Copper (Cu)-Total	mg/L	0.00050	0.00050	0.00050	0.0250	0.0250	0.00
Iron (Fe)-Total	mg/L	0.010	0.010	0.010	0.500	0.500	0.00
Lead (Pb)-Total	mg/L	0.000050	0.000050	0.000050	0.00250	0.00250	0.00
Manganese (Mn)-Total	mg/L	0.00010	0.00010	0.00010	0.00500	0.00500	0.00
Mercury (Hg)-Total	ug/L	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.00
Molybdenum (Mo)-Total	mg/L	0.000050	0.000050	0.000050	0.00671	0.00632	-5.99
Nickel (Ni)-Total	mg/L	0.00050	0.00050	0.00050	0.0250	0.0250	0.00
Selenium (Se)-Total	mg/L	0.000050	0.000050	0.000050	0.00250	0.00250	0.00
Thallium (Tl)-Total	mg/L	0.000010	0.000010	0.000010	0.000500	0.000500	0.00
Uranium (U)-Total	mg/L	0.000010	0.000010	0.000010	0.00226	0.00230	1.75
Zinc (Zn)-Total	mg/L	0.0030	0.0037	0.0030	0.150	0.150	0.00
% Exceedances *							**3.70%**

Footnotes:
RPD = Relative Percent Difference; MDL = Mean Detection Limit
Result below DL were considered as the value of the DL for the RPD calculation
** Percentage of parameters exceeding the QA/QC objectives for the sampling event, which corresponds to grey shaded cells.*
Bold values correspond to a significant blank result above 4 times the detection limit.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Table 3.3 2023 Multi-Meter Calibration Records for pH and Conductivity

Date	pH									Conductivity		
	Standard	Initial Testing	Final Reading	Standard	Initial Testing	Final Reading	Standard	Initial Testing	Final Reading	Standard (uS/cm)	Initial Reading (uS/cm)	Final Reading (uS/cm)
07/02/2023	4.0	4.00	4.00	7.0	6.99	7.02	10.0	9.95	10.06	1413	1401	1414
04/04/2023	4.0	4.51	4.01	7.0	7.47	6.99	10.0	10.32	9.97	1413	1783	1412
04/07/2023	4.0	4.03	4.00	7.0	6.92	7.03	10.0	10.06	10.08	1413	1414	1414
12/07/2023	4.0	4.00	4.01	7.0	6.94	7.01	10.0	9.95	10.01	1413	1395	1414
01/08/2023	4.0	4.09	4.00	7.0	6.89	7.02	10.0	9.97	10.06	1413	1330	1413
02/08/2023	4.0	4.03	4.00	7.0	6.92	7.02	10.0	9.97	10.06	1413	1424	1413
15/08/2023	4.0	4.04	4.00	7.0	7.01	7.04	10.0	10.01	10.12	1413	1415	1413
05/09/2023	4.0	4.05	4.01	7.0	6.96	6.99	10.0	9.85	9.96	1413	1396	1413
08/11/2023	4.0	4.03	4.00	7.0	6.96	7.03	10.0	10.03	10.08	1413	1407	1413

Legend:
NMR = No Measurement Required
NCR = No Calibration Recorded;
Oakton PCTS Testr50
YSI ODO PRO

Table 3.4 2023 Multi-Meter Calibration Records for Salinity and Dissolved Oxygen

Date	Salinity			Dissolved Oxygen		
	Standard (ppt)	Initial Reading (ppt)	Final Reading (ppt)	Standard (%)	Initial Reading (%)	Final Reading (%)
07/02/2023	3.0	4.50	3.00	100	NMR	NMR
04/04/2023	3.0	4.50	3.00	100	NMR	NMR
04/07/2023	3.0	3.50	2.90	100	NMR	NMR
12/07/2023	3.0	4.10	4.10	100	NMR	NMR
01/08/2023	3.0	3.00	4.30	100	NMR	NMR
02/08/2023	3.0	4.30	3.00	100	78.1	100.7
15/08/2023	3.0	3.40	3.00	100	NMR	NMR
05/09/2023	3.0	3.50	4.10	100	NCR	NCR
08/11/2023	3.0	4.40	3.00	100	NMR	NMR

NMR = No Measurement Required
NCR = No Calibration Recorded; Error by technician recording calibration information.
Oakton PCTS Testr50
YSI ODO PRO