

APPENDIX N 2025 MARINE MONITORING REPORT



GOOSE PROJECT

2025 MARINE MONITORING REPORT

DATE
March 2026

REFERENCE
0773592



EXECUTIVE SUMMARY

The Marine Monitoring Plan (MMP; B2Gold 2025) is a requirement of the Nunavut Impact Review Board (NIRB) Project Certificate No. 007, Term and Condition 62 and is designed to monitor the marine receiving environment for Project-related effects and to provide the basis for informed management decisions. The primary activities that could potentially affect the marine environment include water management infrastructure and associated discharge from the desalination plant (i.e., potential changes to water quality), and barge unloading activities.

In 2025, three Marine Laydown Area (MLA) stations and two reference stations were sampled during the ice-covered (April) and open-water (August) season. At each station, a physical oceanography profile was recorded and water and phytoplankton biomass samples were collected.

Physical oceanography profiles were similar among MLA stations and reference stations. Surface waters had lower salinity during the open-water season, indicating fresher water overlying denser, saltier water. Increases in salinity with increasing depth corresponded with decreases in dissolved oxygen with depth at the deeper stations. Dissolved oxygen concentrations were below the CCME interim water quality guideline for the protection of marine aquatic life (8.0 mg/L; CCME 2025) at depths near the sediments at station BRP-46 during the ice-covered season and at station BRP-48 during both ice-covered and open-water season, however, the values were all within 0.25 mg/L (<3% difference) of the guideline limit. Overall, turbidity was low (<10 NTU) and was higher in the upper 4 m of the water column at the MLA stations compared with the reference stations.

There was no clear difference in water quality between stations at similar depths in the MLA and the reference area. Total cadmium concentration at station BRP-51 (Surface; 0.00053 mg/L) during the ice-covered season was 4.4-times higher than the CCME MAL long-term water quality guideline (0.00012 mg/L; CCME 2025) and was within 6% of the detection limit (0.0005 mg/L) indicating substantial analytical uncertainty. Total cadmium concentrations were below the detection limit in all other samples collected, though the detection limit exceeded the CCME MAL guideline. Similarly, the detection limit for total chromium (0.05-0.10 mg/L) exceeded the guideline for hexavalent chromium (Cr(VI); 0.0015 mg/L; CCME 2025) in all samples and exceeded the guideline for trivalent chromium (Cr(III); 0.056; CCME 2025) in one sample, and guideline comparisons for chromium were inconclusive. For subsequent MMP sampling programs, total and dissolved metals samples will be analyzed at a laboratory that can achieve detection limits that are lower than the CCME MAL guidelines and align with the target detection limits in the MMP.

Among MLA stations and reference stations, phytoplankton biomass samples (as chlorophyll-*a*) were low (less than 2.0 µg/L) during the open-water season and were lower during the ice-covered season.

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ACRONYMS AND ABBREVIATIONS

B2Gold Nunavut	B2Gold Back River Corp.
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CCME	Canadian Council of Ministers of the Environment
km	Kilometre
MAL	Marine Aquatic Life
MDMER	Metal and Diamond Mining Effluent Regulations
the mine	the Goose Mine
Project	Goose Project
MLA	Marine Laydown Area: located on the west coast of Bathurst Inlet
NIRB	Nunavut Impact Review Board
PAH	Polycyclic aromatic hydrocarbon
PSU	Practical salinity unit
RPD	Relative Percent Difference
VOC	Volatile Organic Compound

1. INTRODUCTION

1.1 BACKGROUND

The Goose Mine (the Mine) is a gold project owned by B2Gold Nunavut within the West Kitikmeot region of southwestern Nunavut. It is situated 95 km southeast of the southern end of Bathurst Inlet (Kingaok; Figure1-1). The Mine is located predominantly within the Queen Maud Gulf Watershed (*Nunavut Water Regulations*, Schedule 4, SOR/2013-69).

The Goose Project (the Project) is comprised of two main areas: Goose Mine and the Marine Laydown Area (MLA). The majority of annual resupply is completed using the MLA along the western shore of southern Bathurst Inlet, which is connected seasonally to the Mine via an approximately 160 km long winter ice road.

The purpose of the Marine Monitoring Plan (MMP; B2Gold 2025) is to monitor the marine receiving environment for Project-related effects and to provide the basis for informed management decisions. The Project has been designed to minimize, mitigate, and/or manage potential adverse effects on the marine environment.

1.2 REGULATORY REQUIREMENT

The MMP is a requirement of Nunavut Impact Review Board (NIRB) Project Certificate No. 007 Term and Condition 62 which states:

“The Proponent shall maintain a marine monitoring program at the Marine Laydown Area to enable identification of potential impacts of the Project on the marine environment and to inform adaptive management actions. The monitoring program shall be in line with the proposed monitoring in the Aquatic Effects Monitoring Program, or as required by applicable regulatory authorities. At a minimum, water sampling should include end of pipe and control area samples, collected on a regular basis to confirm salinity levels of the discharge and the receiving environment”

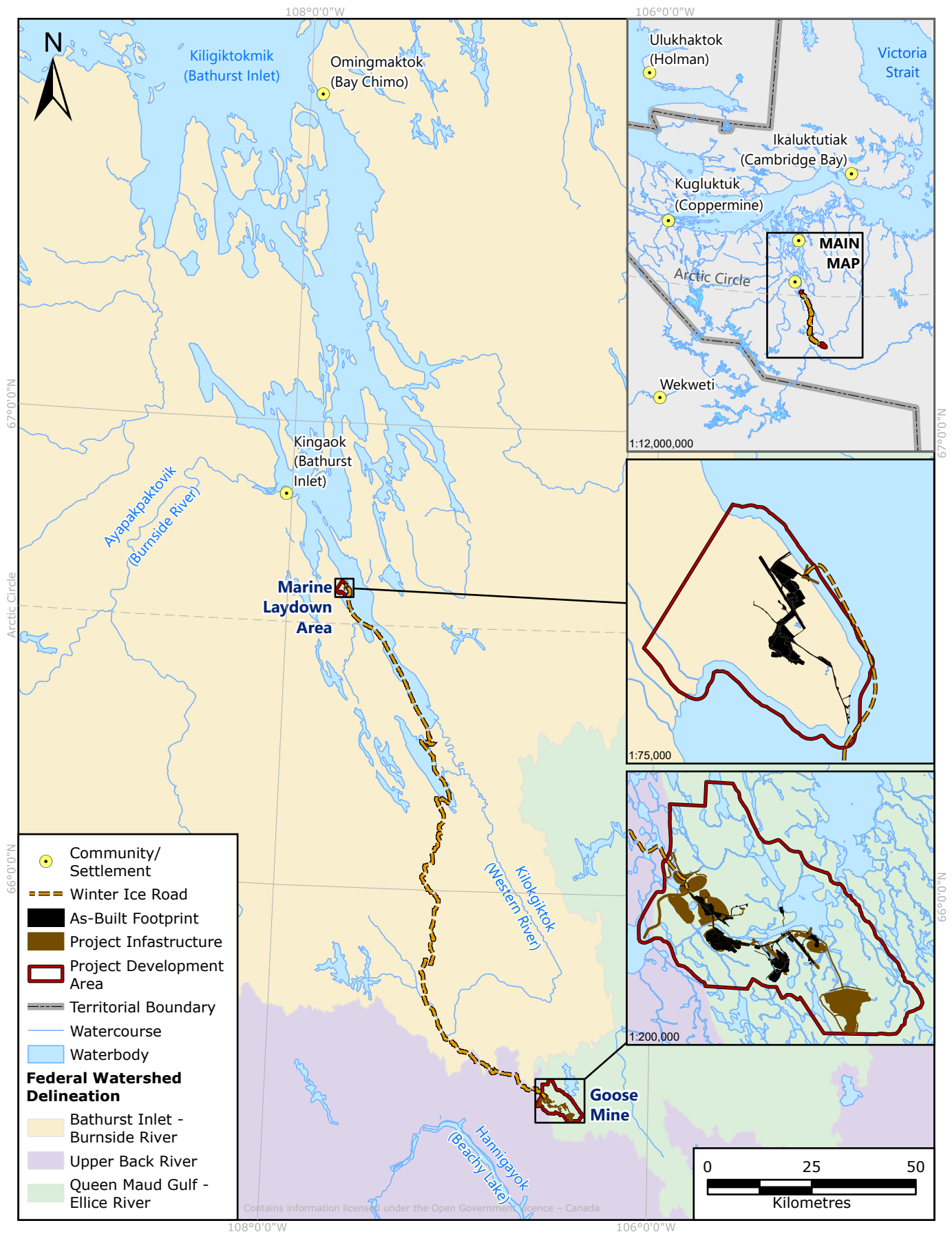
1.3 OBJECTIVES

The scope of the MMP (B2Gold 2025) includes monitoring the marine receiving environment bordering the MLA through the life of the Project as outlined in the NIRB Project Certificate No. 007 Term and Condition 62. The MMP (B2Gold 2025) has been designed to monitor for Project-related effects to a level of detail appropriate for the activity at the MLA, to comply with existing regulations, and to meet Project-specific requirements and commitments.

The primary activities that could affect the marine environment include water management infrastructure and associated discharges from the desalination plant (i.e., potential changes to water quality), and barge unloading activities (i.e., potential changes to water quality or sediment distribution). Results and recommendations from the monitoring program are used to determine if existing management and mitigation measures are adequate and provide an opportunity for ongoing adaptive management. The MMP (B2Gold 2025) will be implemented through the life of the Project, with modifications made as appropriate.

The objective of this 2025 Marine Monitoring Report is to report on monitoring data collected under the MMP (B2Gold 2025) in 2025.

FIGURE 1-1 GOOSE PROJECT OVERVIEW



2. METHODS

2.1 SAMPLING LOCATIONS AND PROGRAM OVERVIEW

Samples were collected from three locations near the MLA and at 2 locations within a reference area (Table 2.2-1, Figure 2.2-1) during two sampling events: under-ice (April) and open-water (August). Physical water column profiles, water quality samples and phytoplankton biomass samples were collected at each station as specified in Table 2.2-2. Sediment quality and benthic invertebrate samples are scheduled to be collected once every three years and were last collected in 2024.

Table 2.2-1 Marine Monitoring Plan Sampling Locations

Location ID	Description	Target Water Depth (m)	Purpose	Geographic Location (UTM)	
				N	E
BRP-46	MLA deep station by the water discharge pipeline	13-15	Monitor marine environment near MLA water discharge/barge offload	7394829	381514
BRP-48	MLA deep station near the barge	13-15	Monitor marine environment near MLA water discharge/barge offload	7394912	381474
BRP-51	MLA shallow station north of the barge	4-5	Monitor marine environment near MLA water discharge/barge offload	7395043	381364
REF-04	Deep reference station	13-15	Reference station for comparison to deep exposure stations within the MLA.	7399686	378787
REF-05	Shallow reference station	4-5	Reference station for comparison to shallow exposure stations within the MLA.	7399700	378764

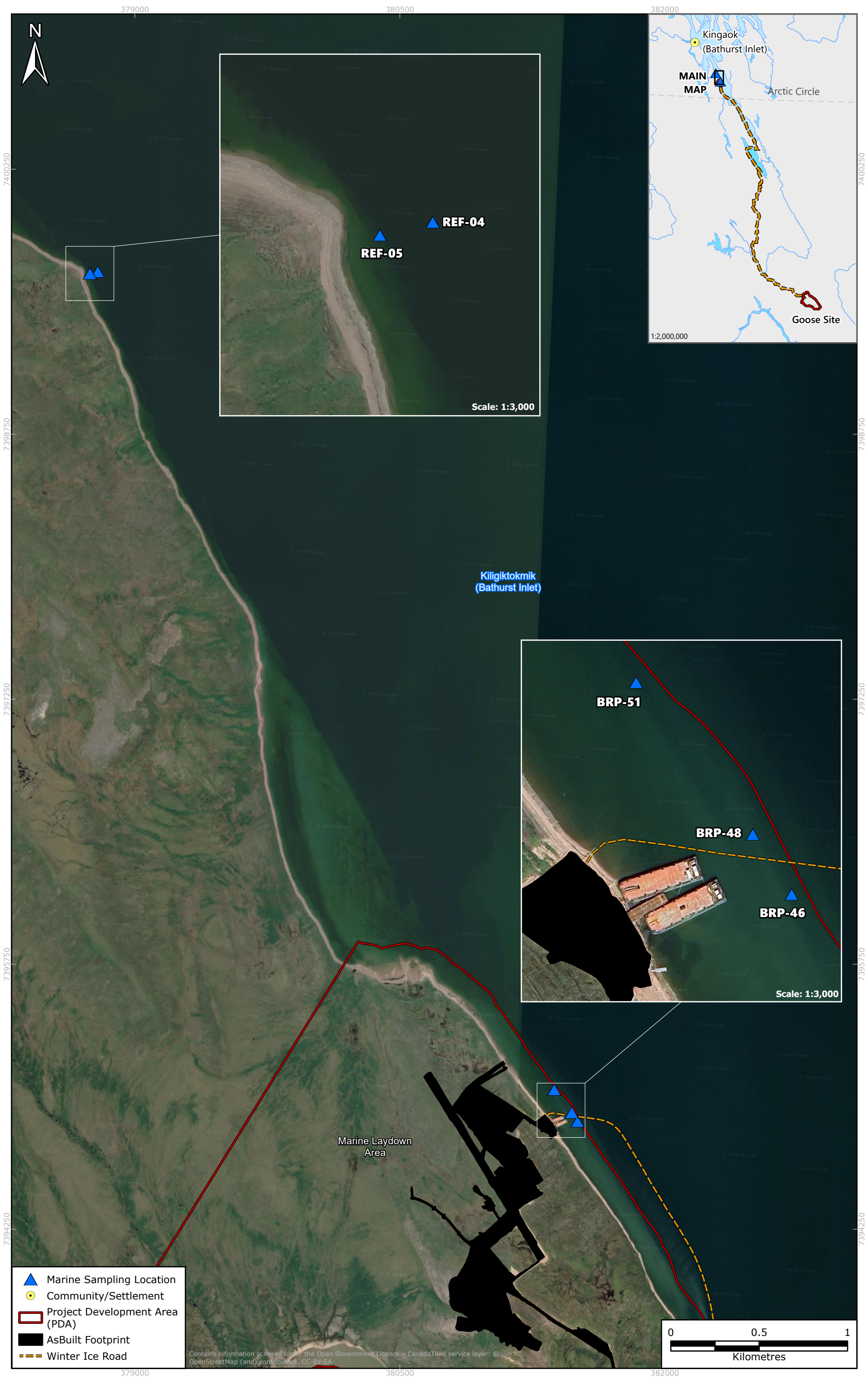
Projection: NAD 1983 UTM Zone 13N

Table 2.2-2 Overview of the Marine Monitoring Plan Sampling Program

Monitoring Aspect	Sampling Locations	Sampling Frequency	Sample Replication and Depth	Sampling Equipment
Physical Oceanography				
Temperature, salinity, dissolved oxygen profiles, light penetration	MLA Stations: BRP-46, BRP-48, BRP-51	Twice annually; April and August	n = 1 profile/station; Entire water column	Conductivity- Temperature- Depth (CTD) probe or multimeter; dissolved oxygen meter; Secchi disk
	Reference Stations: REF-04, REF-05			
Water Quality				
Physical, anions and nutrients, organic carbon, total and dissolved metals, hydrocarbons (F1-F4 and BTEX)	MLA Stations: BRP-46, BRP-48, BRP-51	Twice annually; April and August	n = 1; 1 m below ice/water surface at shallow station BRP-51 and 1 m below ice/water surface and 2 m above bottom at each deeper stations [BRP-46 and BRP-48]	Discrete water sampling Device (e.g., Niskin)
	Reference Stations: REF-04, REF-05		n = 1; 1 m below ice/water surface at shallow station REF-05 and 1 m below ice/water surface and 2 m above bottom at deeper station REF-04	
	QA/QC: Field duplicate, field blank, trip blank		n = 1 field duplicate, field blank, and trip blank	
Phytoplankton				
Biomass (chlorophyll <i>a</i>)	MLA Stations: BRP-46, BRP-48, BRP-51	Twice annually; April and August	n = 3/station @ 1 m below the ice/water surface	Discrete water sampling device (e.g., Niskin)
	Reference Stations: REF-04, REF-05			

n = number of replicates

FIGURE 2.2-1 MARINE MONITORING PLAN SAMPLING STATIONS, GOOSE PROJECT



Physical Oceanography

Physical oceanographic profiles (i.e., temperature, salinity, and dissolved oxygen) were recorded at each sampling location during the ice-covered and the open-water sampling events using a YSI multi-meter. Measurements were recorded at the water surface or just below the bottom of the ice (0.1 m) and every 0.5 m in water depths less than 10 m or every 1 m in deeper water. Total water depth as well as ice thickness, snow cover and height of water from the ice surface (in winter) were recorded.

Salinity (PSU) values were calculated for August sampling using the formula:

$$\text{Salinity (psu)} = 0.00064 * \text{Specific Conductivity } (\mu\text{S/cm}),$$

which is a simplified approximation of the practical salinity scale (PSS-78; Fofonoff and Millard, 1983).

During the open-water season, Secchi depth was measured with a 30-cm white disk which was lowered over the shaded side of the boat until no longer visible, raised back into view again and re-lowered. The second disappearance depth was recorded as the Secchi depth, from which the euphotic zone depth (Z) was calculated using the formula:

$$Z = 4.6/k'$$

Where 4.6 is a constant derived from Beer's Law, and k' is the extinction coefficient calculated from the Secchi depth (D_s) using the formula (Poole & Atkins 1929):

$$k' = 1.7/D_s$$

2.2 WATER QUALITY

2.2.1 SAMPLING AND ANALYSIS

Water quality samples were collected in April and August, concurrent with physical oceanography. Water quality samples were collected with a discrete grab sampler (a Kimmerer during under-ice sampling and a GOFlo during open-water) from specific sampling locations (Table 2.2-2) at 1 m below the water surface (open-water) or bottom of the ice (under-ice) and at 2 m above the sea floor at locations deeper than 5 m.

Samples were collected in bottles provided by Bureau Veritas, an accredited analytical laboratory. Field personnel wore new nitrile gloves and filtered and preserved samples as recommended by the analytical laboratory. Samples were refrigerated after collection and transferred to coolers with ice-packs for shipment to the analytical laboratory for analysis of the parameters required by the MMP (B2Gold 2025).

Water quality data were screened for exceedances of Canadian Council of Ministers of the Environment (CCME) Marine Aquatic Life (MAL) water quality guidelines. Results were also compared to 2023-2024 reference station range (Nunami 2024 and 2025), and seasonal (under-ice vs open-water) and depth-based (surface and bottom) patterns were summarized.

2.2.2 QUALITY ASSURANCE AND QUALITY CONTROL

Samples were collected following standard sampling protocol by qualified personnel using suitable sampling equipment. Samples were shipped offsite at the earliest possible time to support samples reaching the laboratory within recommended holding times. Field duplicate samples were collected at a

quantity of 10% of all water samples collected and field blanks and trip blanks will be collected at a quantity of 5% of all water samples collected.

Relative percent differences (RPD) were calculated between primary and duplicate samples using the equation below for every parameter greater than 5-times the analytical detection limit:

$$RPD = \frac{|Primary - Duplicate|}{(Primary + Duplicate)/2} * 100$$

2.3 PHYTOPLANKTON

2.3.1 SAMPLING AND ANALYSIS

Phytoplankton biomass samples (as chlorophyll-*a*) were collected at each sampling location during the under-ice and open-water sampling events. Samples were collected one meter below the water surface (open-water) or one meter below the ice bottom (under-ice) using the same discrete sampling devices used for water quality sampling. Samples were collected in triplicate, with each replicate sample collected from a separate cast of the water sampling device and kept cool and dark until filtered. Within 24 hours of collection, samples were filtered onto 0.45 µm filters. The volume filtered was recorded and the filter kept frozen and sent to an accredited analytical laboratory for analysis.

Phytoplankton biomass samples were analyzed for three photosynthetic pigments: chlorophyll-*a* (chl-*a*), chlorophyll-*c* (chl-*c*), and pheophytin-*a*. Chl-*a* is the most common photosynthetic pigment, and is commonly used to quantify algae biomass (Cullen 1982). Chl-*c* is another photosynthetic pigment that is more efficient at absorbing blue and green light than chl-*a*, making it better suited for photosynthesis in deep water and under-ice conditions (Mysliwa-Kurdziel et al. 2019). Pheophytin-*a* is a chl-*a* degradation product.

Due to a miscommunication with the laboratory, replicates collected in April were analyzed as one sample instead of individual replicates. This difference from the sampling plan is not expected to influence the results due to the very low phytoplankton biomass (i.e., chl-*a* was less than the detection limit) present during April.

3. RESULTS

3.1 PHYSICAL OCEANOGRAPHY

During the 2025 under-ice sampling program, an oxycline was observed at stations BRP-46, BRP-48, BRP-51, and REF-04 at approximately 6 meters depth, where dissolved oxygen decreased from approximately 12 mg/L to approximately 8 mg/L, and pH decreased by approximately 0.2 pH units (Figures 3.1-1 to 3.1-4). At the same depth as the oxycline, salinity and temperature increased by approximately 1 practical salinity unit (PSU) and 1.6 °C, respectively, which suggest the water column was stratified (Figures 3.1-1 to 3.1-4). At REF-05, physical oceanography profiles indicated uniform conditions throughout the water column, likely because of the shallower depth of 4.3 m (Figure 3.1-5). Turbidity was low throughout the water column at all stations (Figures 3.1-1 to 3.1-5). Physical oceanography profiles in 2025 were similar to those measured in 2024 while profiles in 2023 were more indicative of a well-mixed water column as

indicated by more uniform salinity, temperature, dissolved oxygen, and pH measurements throughout the water column (Figures 3.1-1 to 3.1-5).

Dissolved oxygen concentrations were below the CCME interim water quality guideline for the protection of marine aquatic life (WQG-MAL) value (8.0 mg/L; CCME 2025) at station BRP-46 at depths of 11 m and below and at station BRP-48 at depths of 10.5 m and below, however the values were all within 0.25 mg/L (<3% difference) of the guideline value (Figures 3.1-1 and 3.1-2).

During the 2025 open-water sampling program, there was a gradual increase in salinity with depth at all of the deeper (greater than 10 m) sampling stations indicating fresher water overlying denser, saltier water and corresponding with a gradual decrease in dissolved oxygen, pH, and temperature with depth (BRP-46, BRP-48, and REF-04; Figures 3.1-1, 3.1-2, and 3.1-4). Salinity, temperature, pH, and dissolved oxygen values were consistent throughout the water column at shallow stations (BRP-51 and REF-05), except for pH at REF-05, where there was an increase in pH of 0.2 pH units between the surface and 0.5 m, followed by relatively consistent pH values throughout the water column (Figures 3.1-3 and 3.1-5). Dissolved oxygen concentrations were below the CCME interim WQG-MAL value (8.0 mg/L) at station BRP-48 at depths of 16 m and below, however the values were all within 0.25 mg/L (<3% difference) of the guideline value (Figure 3.1-2; CCME 2025). Turbidity was low (<10 NTU) at all stations and depths, however, turbidity was higher in the upper 4 m of the water column at MLA stations BRP-46, BRP-48, and BRP-51 compared with the reference stations REF-04 and REF-05 (Figures 3.1-1 to 3.1-5)

Secchi depth during the 2025 open-water sampling program, was deeper at the reference stations (3.1 to 3.5 m) compared with BRP-46, BRP-48, and BRP-51 (1.2 to 1.4 m; Table 3.1-1) suggesting shallower light penetration and euphotic zone depth at stations near the MLA relative to the reference stations which aligns with the turbidity results.

FIGURE 3.1-1 SALINITY, TEMPERATURE, PH, DISSOLVED OXYGEN, TURBIDITY, AND DEPTH PROFILES, STATION BRP-46, 2023-2025

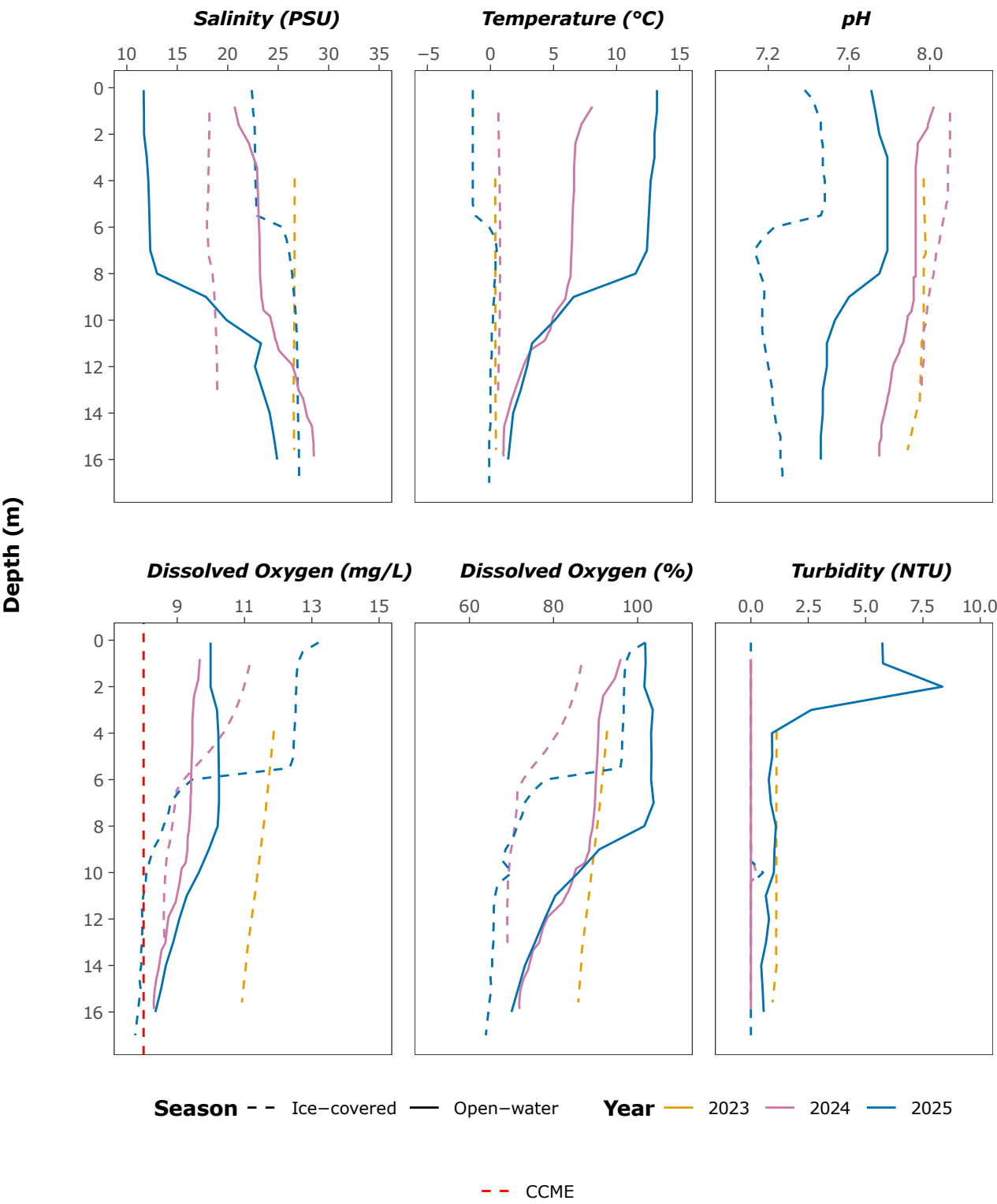


FIGURE 3.1-2 SALINITY, TEMPERATURE, PH, DISSOLVED OXYGEN, TURBIDITY, AND DEPTH PROFILES, STATION BRP-48, 2023-2025

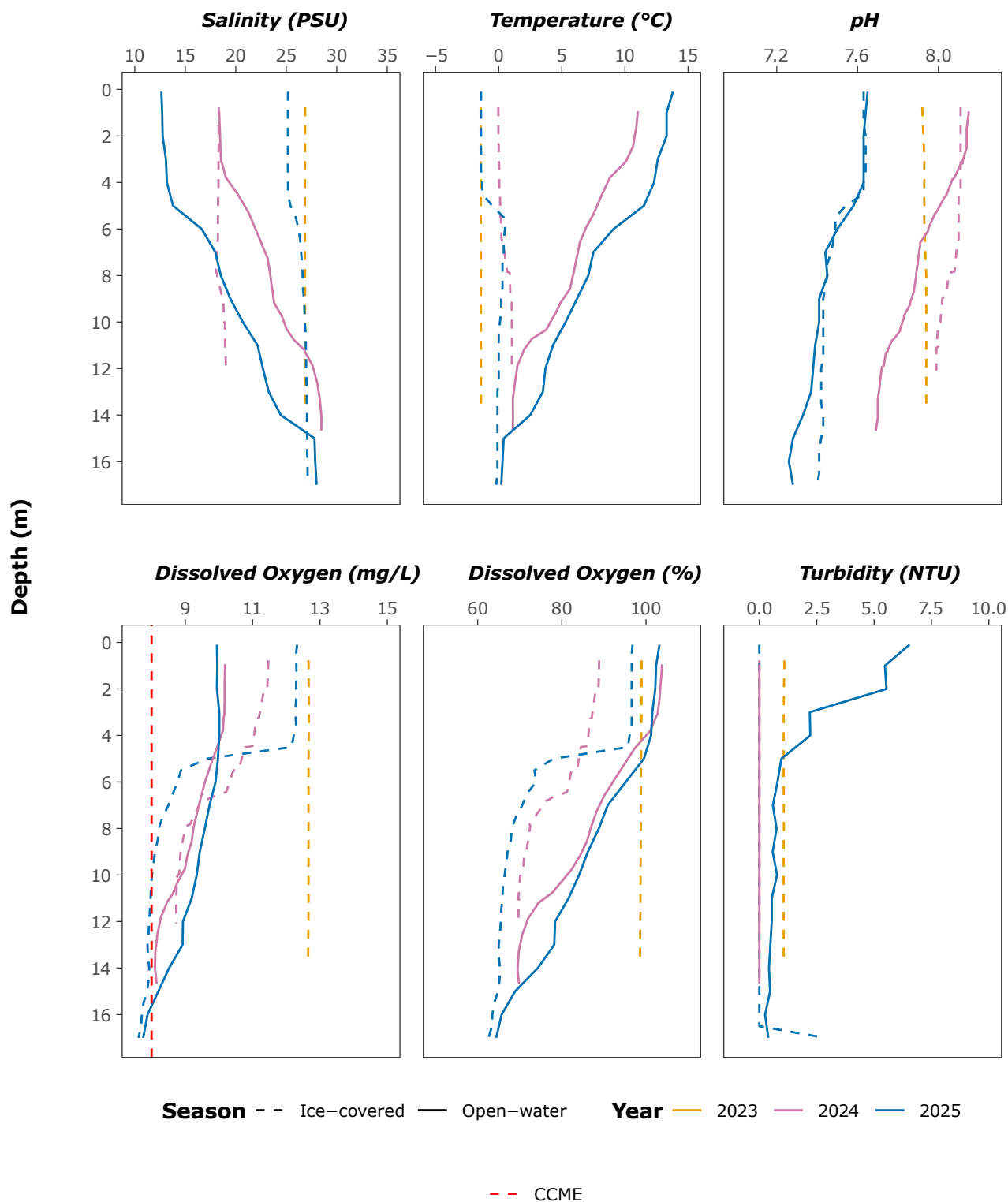


FIGURE 3.1-3 SALINITY, TEMPERATURE, PH, DISSOLVED OXYGEN, TURBIDITY, AND DEPTH PROFILES, STATION BRP-51, 2023-2025

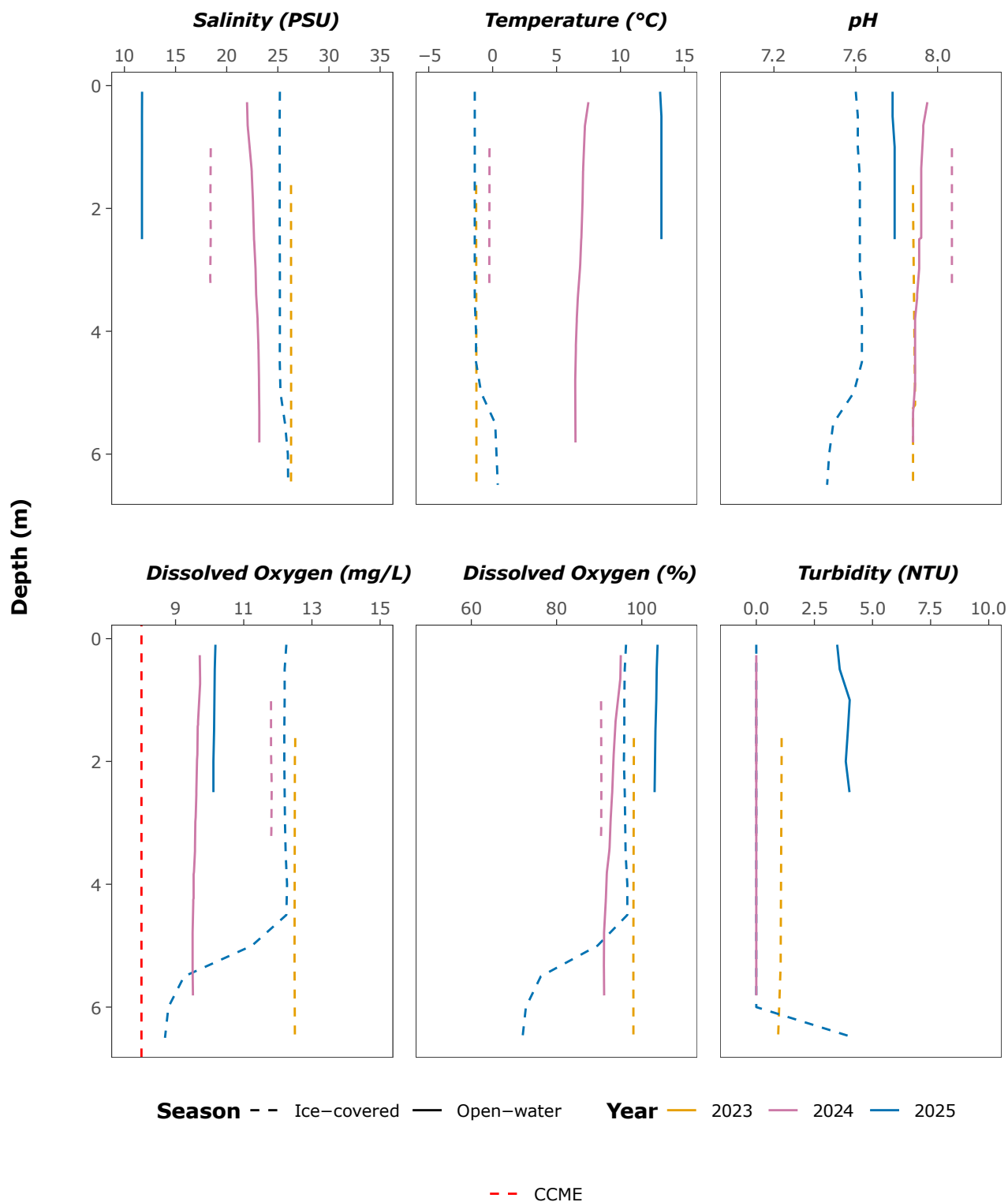


FIGURE 3.1-4 SALINITY, TEMPERATURE, PH, DISSOLVED OXYGEN, TURBIDITY, AND DEPTH PROFILES, STATION REF-04, 2023-2025

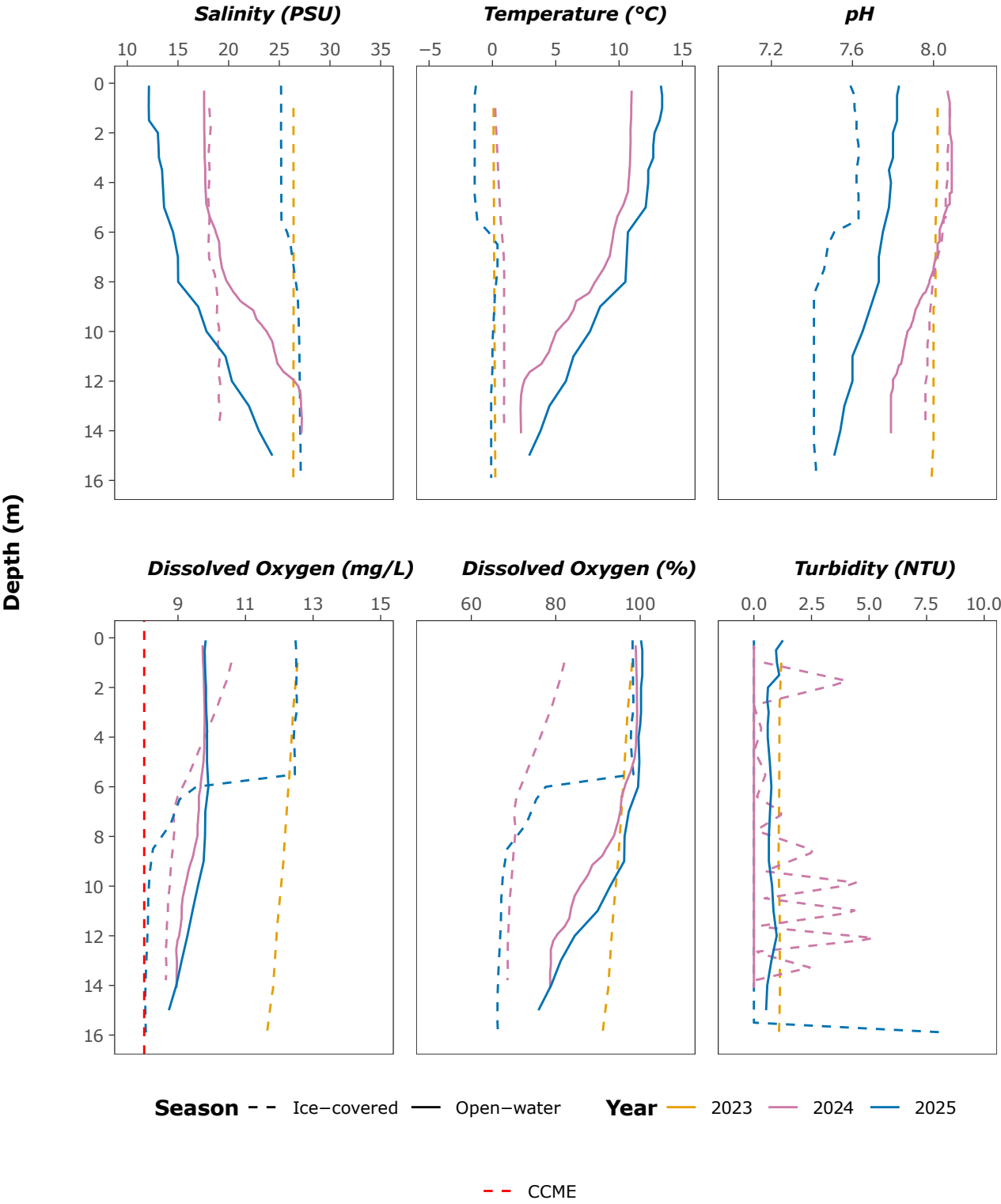


FIGURE 3.1-5 SALINITY, TEMPERATURE, PH, DISSOLVED OXYGEN, TURBIDITY, AND DEPTH PROFILES, STATION REF-05, 2023-2025

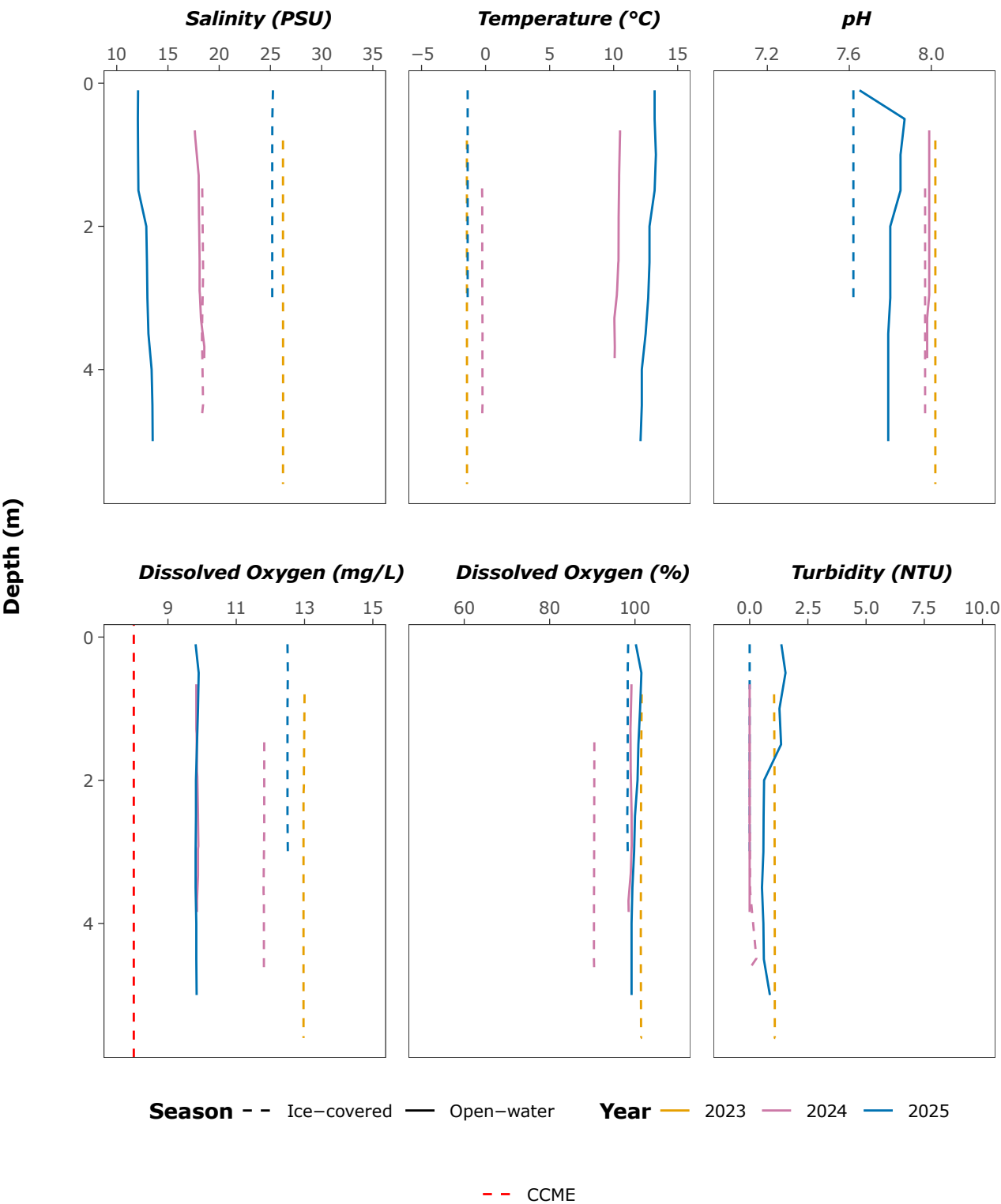


Table 3.1-1 Secchi Depth, Estimated Euphotic Zone Depth, and Maximum Depth, 2025 Open Water Season

Station	Secchi Depth (m)	Estimated Euphotic Zone Depth (m)	Maximum Depth (m)
BRP-46	1.2	3.2	16.6
BRP-48	1.2	3.2	17.7
BRP-51	1.4	2.9 (bottom)	2.9
REF-04	3.5	9.5	15.2
REF-05	3.1	5.5 (bottom)	5.5

3.2 WATER QUALITY

3.2.1 PHYSICO-CHEMICAL, ANION, AND NUTRIENT PARAMETERS

During the 2025 under-ice sampling program, turbidity and total suspended solids (TSS) concentrations were low (<0.5 NTU and <10 mg/L, respectively) at all sampling stations (Table 3.2-1). Concentrations of nitrogen compounds (total nitrogen and ammonia) were higher during the 2025 under ice sampling program compared to 2023-2024 concentrations (Table 3.2-1). Ammonia concentrations in 2025 at the MLA and reference stations exceeded the 2023-2024 reference station maximum (0.0065 mg/L) by more than 15-fold, except the BRP-48 surface sample which had a concentration below the detection limit (0.02 mg/L; Table 3.2-1).

Total nitrogen concentrations exceeded the 2023-2024 reference station maximum (<0.03 mg/L) at all stations by more than 6-fold (Table 3.2-1). Total and dissolved organic carbon (TOC and DOC) concentrations were more than 60-fold and 70-fold higher than the 2023-2024 reference station maximums, respectively (Table 3.2-1).

For the majority of physico-chemical, anion, and nutrient parameters concentrations were consistent between surface and bottom samples during the under-ice sampling program, and there were no clear differences between MLA stations and reference stations (Table 3.2-1) suggesting that the higher nitrogen and organic carbon levels observed in 2025 were likely due to natural variability and not related to the MLA.

During the open-water sampling program, turbidity exceeded 4 NTU in all of the MLA station surface water samples, exceeding the 2023-2024 reference station maximum by more than 5-fold (Table 3.2-1). Turbidity was low (<0.5 NTU) at the reference stations and in the MLA station deep water samples (Table 3.2-1). Concentrations of TSS were low (<10 mg/L) at all stations except for the bottom sample collected at BRP-48, where a concentration of 13 mg/L was observed (Table 3.2-1). Total nitrogen concentrations were low and within 2.5-times the detection limit in all of the open-water samples. Ammonia concentrations were also low and within 2.5-times the detection limit (0.005 mg/L) at all stations except for the bottom sample collected at BRP-46 and BRP-48, where concentrations exceeded the 2023-2024 reference station maximum by more than 40% (Table 3.2-1). Concentrations of TOC were below 3.0 mg/L and DOC was below 2.0 mg/L at all stations (Table 3.2-1).

For the majority of physico-chemical anion, and nutrient parameters, concentrations were approximately two-times higher in the bottom water samples compared to surface water samples and corresponded with salinity measurements (Table 3.2-1). For the majority of physico-chemical, anion, and nutrient parameters, there were no clear differences between MLA stations and reference stations during the 2025 open-water sampling program except for higher turbidity, TSS, and ammonia, at MLA stations compared to reference stations (Table 3.2-1). There were no exceedances of CCME MAL guidelines for physico-chemical, anion, and nutrient parameters at any station (CCME 2025).

Table 3.2-1 Physico-chemical, Anion, and Nutrient Parameters in Marine Monitoring Stations, 2023-2025

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04		REF-05	Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
Physico-Chemical	Conductivity	-	-	Ice-covered	µS/cm	2	40,000	41,000	40,000	42,000	40,000	40,000	42,000	40,000	39,900 to 41,600	40,500 to 41,600
				Open-water	uS/cm	2	19,500	39,000	19,000	40,000	20,000	19,000	38,000	19,000	26,700	39,300
	Total Hardness (CaCO ₃)	-	-	Ice-covered	mg/L	0.5	5,720	5,010	5,235	4,880	5,250	5,220	4,840	5,040	4,860 to 5,030	4,880 to 5,000
				Open-water	mg/L	0.5	2,195	4,600	2,240	4,900	2,220	2,130	4,540	2,160	3,280 to 3,460	5,150
	Dissolved Hardness (CaCO ₃)	-	-	Ice-covered	mg/L	0.5	4,290	4,820	4,800	4,470	4,340	4,370	4,720	4,550	4,780 to 4,880	4,840 to 4,980
				Open-water	mg/L	0.5	2,165	4,740	2,230	4,960	2,170	2,060	4,690	2,060	3,050 to 3,120	4,700
	Salinity	-	-	Ice-covered	PSU	2	26	26	25	27	25	25	27	25	26.4 to 26.7	26.8 to 26.9
				Open-water	PSU	2	12	26	12	27	12	12	25	12	16.8 to 17.1	25.8
	Total Dissolved Solids	-	-	Ice-covered	mg/L	17	>13,000	>13000	>13000	>13000	>13,000	>13,000	>13,000	>13,000	27,800 to 28,800	27,900 to 30,100
				Open-water	mg/L	17	12,000	>13,000	>8,000	>8,000	12,000	>8,000	>8,000	>8,000	22,700 to 23,000	30,900
	Total Suspended Solids	-	-	Ice-covered	mg/L	1	<1	2.7	4.75	5.1	3.5	6.4	<1	1.8	<3 to 3.2	<3
				Open-water	mg/L	1	4.7	2.7	8.5	13	5.9	3.3	6.3	3.2	<3 to 3.7	<3
	Turbidity	-	-	Ice-covered	NTU	0.1	0.1	0.12	0.135	0.11	<0.1	<0.1	0.37	0.43	<0.1 to 0.31	0.16 to 0.18
				Open-water	NTU	0.1	6.45	0.11	4.2	<0.1	5.2	0.13	<0.1	0.16	0.54 to 0.7	0.74
Anions	Alkalinity (Total as CaCO ₃)	-	-	Ice-covered	mg/L	1	100	100	100	100	98	99	100	100	-	-
				Open-water	mg/L	1	52.5	100	54	100	54	53	98	52	-	-
	Bicarbonate (HCO ₃)	-	-	Ice-covered	mg/L	1	120	120	120	120	120	120	130	120	-	-
				Open-water	mg/L	1	64	130	65	130	65	65	120	63	-	-
	Carbonate (CO ₃)	-	-	Ice-covered	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
				Open-water	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
	Bromide (Br)	-	-	Ice-covered	mg/L	0.5	52	54	53	56	52	52	55	53	47.1 to 52.3	48 to 53.3
				Open-water	mg/L	0.2-0.5	23	52	24	53	23	23	50	23	29.8 to 31	46.2
	Chloride (Cl)	-	-	Ice-covered	mg/L	100	14,000	15,000	14,000	15,000	14,000	14,000	14,000	13,000	13,900 to 14,700	14,100 to 15,000
	Fluoride (F)	-	-	Ice-covered	mg/L	0.05	0.71	0.72	0.705	0.72	0.7	0.71	0.74	0.71	<0.02	<0.02
				Open-water	mg/L	0.05	0.38	0.63	0.39	0.67	0.38	0.36	0.64	0.38	<0.02	<0.02
	Hydroxide (OH)	-	-	Ice-covered	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	-	-

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04		REF-05	Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
				Open-water	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
	Sulphate (SO ₄)	-	-	Ice-covered	mg/L	13	1,900	2,100	2,000	2,100	1,900	1,900	2,000	2,000	1,920 to 2,110	1,970 to 2,120
Nutrients	Ammonia (N)	-	-	Ice-covered	mg/L	0.005-0.02	0.13	0.11	<0.02	0.11	0.13	0.097	0.21	0.15	<0.005 to 0.0065	<0.005
				Open-water	mg/L	0.005	<0.005	0.025	<0.005	0.046	<0.005	<0.005	0.01	<0.005	<0.005 to 0.0089	0.0171
	Nitrate (N)	45	339	Ice-covered	mg/L	0.015	0.035	0.053	0.02125	0.06	0.036	0.023	0.041	0.023	<0.005	<0.005
				Open-water	mg/L	0.003-0.075	<0.045	0.024	<0.075	<0.03	0.0032	<0.015	<0.03	<0.003	<0.005	<0.005
	Nitrite (N)	-	-	Ice-covered	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
				Open-water	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nitrogen (N)	-	-	Ice-covered	mg/L	0.1	0.23	0.2	0.215	0.23	0.22	0.23	0.2	0.22	<0.03	<0.03
				Open-water	mg/L	0.02-0.1	0.1035	0.13	0.12	0.1	0.058	0.098	<0.1	0.048	0.057 to 0.146	0.082
	Orthophosphate (P)	-	-	Ice-covered	mg/L	0.001	0.031	0.043	0.031	0.044	0.032	0.031	0.045	0.031	0.0315 to 0.0363	0.0324 to 0.0399
				Open-water	mg/L	0.001	0.00465	0.043	0.0062	0.045	0.0047	0.0042	0.04	0.0046	0.0083 to 0.0104	0.0413
	Phosphorus (P)	-	-	Ice-covered	mg/L	0.001	0.029	0.037	0.0295	0.038	0.028	0.028	0.039	0.027	<1.251 to 0.6442	<1.251 to 0.64455
				Open-water	mg/L	0.001	0.0095	0.037	0.014	0.04	0.0076	0.0068	0.033	0.0047	-	-
	Reactive Silica	-	-	Ice-covered	mg/L	0.05	1.2	1.6	1.2	1.6	1.2	1.2	1.7	1.2	1.12 to 1.51	1.16 to 1.5
				Open-water	mg/L	0.05	0.675	1.7	0.7	2	0.7	0.65	1.6	0.71	0.6 to 0.65	1.31
Organic Carbon	Dissolved Organic Carbon	-	-	Ice-covered	mg/L	10	140	150	140	140	130	130	150	150	1.67 to 1.74	1.22 to 1.83
				Open-water	mg/L	0.2	1.55	0.94	0.42	1.2	1.7	1.5	0.95	1.8	1.78 to 1.96	1.14
	Total Organic Carbon	-	-	Ice-covered	mg/L	10	180	140	125	150	130	140	140	130	1.55 to 2.03	1.1 to 1.67
				Open-water	mg/L	0.2	2.05	1.7	1.8	1.1	2.1	2.9	2	2	1.86 to 2	1.16

Note:
“-“ indicates no applicable guideline (guideline column) or that data were not available (reference station range columns).
“<” indicates value was less than the analytical detection limit.
“>” indicates that concentration exceeded the maximum analytical detection range.

3.2.2 METALS

During the under-ice sampling program, 69% (47/68) of total and dissolved metals parameters were below the detection limit in all samples (Table 3.2-2). More dissolved metals were detected than total metals because detection limits were generally lower for dissolved metals compared to total metals due to matrix interference that required greater dilution of total metals samples in the laboratory (Appendix B-1). The total and dissolved metals that were detected in 2025 were similar to those detected at the reference stations in 2023-2024, however differences in analytical precision between the sampling years introduced uncertainty in interannual comparisons. For example, dissolved arsenic was below detection (<0.0001 mg/L) in 2023-2024 reference stations but was detected at concentrations within 1.3-times the 2025 detection limit (0.001 mg/L) at all stations in 2025, indicating a potential increase in concentrations with high analytical uncertainty.

Total cadmium at station BRP-51 (Surface; 0.00053 mg/L) was 4.4-times higher than the CCME MAL long-term water quality guideline (0.00012 mg/L; CCME 2025) but was within 6% of the detection limit (0.0005 mg/L) indicating substantial analytical uncertainty (Table 3.2-2). Total cadmium concentrations were below the detection limit in all other samples collected during the under-ice sampling event, though the detection limit exceeded the CCME MAL guideline. Concentrations of dissolved cadmium were below the detection limit (<0.0001 mg/L) in all samples collected during the 2025 under-ice sampling program. In 2024, all samples were below the guideline value for total cadmium (Nunami 2025). In 2023, all samples were below detection (<0.00025 mg/L; Numani 2024) but guideline comparisons were also inconclusive because the detection limit was greater than the guideline. The reported detection limit in 2025 for total chromium (0.05-0.10 mg/L) exceeded the guideline for hexavalent chromium (Cr(VI); 0.0015 mg/L; CCME 2025) in all samples and exceeded the guideline for trivalent chromium (Cr(III); 0.056; CCME 2025) in one sample, so guideline comparisons for chromium were inconclusive. For the remaining total and dissolved metal parameters with CCME MAL guidelines, concentrations were below the guideline values in all samples.

During the open-water sampling, 74% (50/68) of total and dissolved metals parameters were below the detection limit in all samples (Table 3.2-2). Detections in 2025 were similar to detections in the 2023-2024 reference stations, however differences in detection limits between years introduced uncertainty in inter-annual comparisons. There were no parameters with concentrations exceeding the CCME MAL guidelines during the open-water sampling event. However, detection limits for total cadmium and total chromium exceeded the guideline values and the guideline comparison were inconclusive.

There were no clear differences in concentration between reference stations and MLA stations in 2025.

Table 3.2-2 Total and Dissolved Metals in Marine Monitoring Program Stations, 2023-2025

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04	REF-05		Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
Total Metals	Aluminum (Al)	-	-	Ice-covered	mg/L	0.15-0.3	<0.15	<0.15	<0.15	<0.3	<0.15	<0.15	<0.15	<0.15	<0.003	<0.003
				Open-water	mg/L	0.15-0.3	<0.3	<0.3	0.17	<0.15	<0.3	<0.3	<0.3	<0.3	<0.003 to 0.0334	<0.003
	Antimony (Sb)	-	-	Ice-covered	mg/L	0.025-0.05	<0.025	<0.025	<0.025	<0.05	<0.025	<0.025	<0.025	<0.025	<0.0001	<0.0001
				Open-water	mg/L	0.025-0.05	<0.05	<0.05	<0.025	<0.025	<0.05	<0.05	<0.05	<0.05	<0.0001	<0.0001
	Arsenic (As)	0.0125 ^a	-	Ice-covered	mg/L	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.0001	<0.0001
				Open-water	mg/L	0.005-0.01	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.0001	<0.0001
	Barium (Ba)	-	-	Ice-covered	mg/L	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	0.0112 to 0.0122	0.0104 to 0.0111
				Open-water	mg/L	0.05-0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	0.00908 to 0.00912	0.00993
	Beryllium (Be)	-	-	Ice-covered	mg/L	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.0001	<0.0001
				Open-water	mg/L	0.005-0.01	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.0001	<0.0001
	Bismuth (Bi)	-	-	Ice-covered	mg/L	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.00005	<0.00005
				Open-water	mg/L	0.05-0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.00005	<0.00005
	Boron (B)	-	-	Ice-covered	mg/L	2.5-5	4.4	4.1	4.2	<5	4.2	4.2	4	3.9	3.4 to 3.59	3.34 to 3.65
				Open-water	mg/L	2.5-5	<5	<5	<2.5	4.6	<5	<5	<5	<5	2.26 to 2.34	3.7
	Cadmium (Cd)	0.00012	-	Ice-covered	mg/L	0.0005-0.001 ^b	<0.0005	<0.0005	<0.0005	<0.001	0.00053	<0.0005	<0.0005	<0.0005	<0.000005	<0.000005
				Open-water	mg/L	0.0005-0.001 ^b	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.000005	<0.000005
	Calcium (Ca)	-	-	Ice-covered	mg/L	2.5-5	361	325	338	312	338	338	318	322	311 to 319	310 to 319
				Open-water	mg/L	2.5-5	136	290	144	313	142	137	282	134	201 to 211	313
	Chromium (Cr)	Cr(VI): 0.0015 Cr(III): 0.056 ^a	-	Ice-covered	mg/L	0.05-0.1 ^b	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.0005	<0.0005
				Open-water	mg/L	0.05-0.1 ^b	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0005
	Cobalt (Co)	-	-	Ice-covered	mg/L	0.01-0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.0001	<0.0001
				Open-water	mg/L	0.01-0.02	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.0001	<0.0001
	Copper (Cu)	-	-	Ice-covered	mg/L	0.025-0.05	<0.025	<0.025	<0.025	<0.05	<0.025	<0.025	<0.025	<0.025	<0.0005	<0.0005

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04	REF-05		Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
	Iron (Fe)	-	-	Open-water	mg/L	0.025-0.05	<0.05	<0.05	<0.025	<0.025	<0.05	<0.05	<0.05	<0.05	<0.0005	<0.0005
				Ice-covered	mg/L	0.5-1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01
				Open-water	mg/L	0.5-1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<0.01	<0.01
	Lead (Pb)	-	-	Ice-covered	mg/L	0.01-0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.00005	<0.00005
				Open-water	mg/L	0.01-0.02	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.00005	<0.00005
	Lithium (Li)	-	-	Ice-covered	mg/L	0.1-0.2	0.17	0.16	0.16	<0.2	0.16	0.16	0.15	0.16	0.132 to 0.137	0.133 to 0.135
				Open-water	mg/L	0.1-0.2	<0.2	<0.2	<0.1	0.13	<0.2	<0.2	<0.2	<0.2	0.0836 to 0.0854	0.136
	Magnesium (Mg)	-	-	Ice-covered	mg/L	2.5-5	1,170	1,020	1,067.5	995	1,070	1,060	984	1,030	991 to 1,030	996 to 1,020
				Open-water	mg/L	2.5-5	450	942	457	1,000	452	435	930	443	675 to 712	1,060
	Manganese (Mn)	-	-	Ice-covered	mg/L	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.0001 to 0.00343	<0.0001
				Open-water	mg/L	0.05-0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	0.00263 to 0.00282	<0.0001
	Mercury (Hg)	0.000016 ^a	-	Ice-covered	mg/L	0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.000005	<0.000005
				Open-water	mg/L	0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.000005	<0.000005
	Molybdenum (Mo)	-	-	Ice-covered	mg/L	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	0.0081 to 0.00903	0.0084 to 0.00898
				Open-water	mg/L	0.05-0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	0.0054 to 0.00551	0.00809
	Nickel (Ni)	-	-	Ice-covered	mg/L	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.0005	<0.0005
				Open-water	mg/L	0.05-0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0005
	Potassium (K)	-	-	Ice-covered	mg/L	2.5-5	358	311	326.5	294	328	323	302	312	314 to 318	311 to 331
				Open-water	mg/L	2.5-5	129	275	137	302	135	130	268	126	212 to 215	324
	Selenium (Se)	-	-	Ice-covered	mg/L	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.00005	<0.00005
				Open-water	mg/L	0.005-0.01	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.00005	<0.00005
	Silicon (Si)	-	-	Ice-covered	mg/L	5-10	<5	<5	<5	<10	<5	<5	<5	<5	<0.1	<0.1
				Open-water	mg/L	5-10	<10	<10	<5	<5	<10	<10	<10	<10	<0.1	<0.1

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04	REF-05		Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom			Bottom	Surface	Surface	Bottom
	Silver (Ag)	-	0.0075	Ice-covered	mg/L	0.001-0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.00001	<0.00001
				Open-water	mg/L	0.001-0.002	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.00001	<0.00001
	Sodium (Na)	-	-	Ice-covered	mg/L	2.5-5	9,780	8,480	8,920	8,190	8,890	8,870	8,130	8,550	7,910 to 8,430	7,910 to 8,580
				Open-water	mg/L	2.5-5	3,620	7,830	3,710	8,230	3,810	3,670	7,640	3,580	5,430 to 5,570	8,490
	Strontium (Sr)	-	-	Ice-covered	mg/L	0.05-0.1	6.96	6.05	6.28	5.74	6.32	6.17	5.95	6.05	5.71 to 5.94	5.81 to 5.96
				Open-water	mg/L	0.05-0.1	2.49	5.5	2.76	5.83	2.52	2.45	5.34	2.48	3.57 to 3.58	5.52
	Sulphur (S)	-	-	Ice-covered	mg/L	150-300	881	775	812	722	807	784	756	769	741 to 772	731 to 768
				Open-water	mg/L	150-300	<300	616	326	731	344	338	611	<300	512 to 518	713
	Thallium (Tl)	-	-	Ice-covered	mg/L	0.0005-0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.00001	<0.00001
				Open-water	mg/L	0.0005-0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.00001	<0.00001
	Tin (Sn)	-	-	Ice-covered	mg/L	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.0001	<0.0001
				Open-water	mg/L	0.25-0.5	<0.5	<0.5	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.0001	<0.0001
	Titanium (Ti)	-	-	Ice-covered	mg/L	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.0003	<0.0003
				Open-water	mg/L	0.25-0.5	<0.5	<0.5	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.0003	<0.0003
	Uranium (U)	-	-	Ice-covered	mg/L	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	0.00225 to 0.00251	0.00243 to 0.00244
				Open-water	mg/L	0.005-0.01	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	0.00141 to 0.00142	0.00221
	Vanadium (V)	-	-	Ice-covered	mg/L	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.0005	<0.0005
				Open-water	mg/L	0.25-0.5	<0.5	<0.5	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.0005
	Zinc (Zn)	-	-	Ice-covered	mg/L	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.003	<0.003
				Open-water	mg/L	0.25-0.5	<0.5	<0.5	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.003	<0.003
	Zirconium (Zr)	-	-	Ice-covered	mg/L	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.0002	<0.0002
				Open-water	mg/L	0.005-0.01	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.0002	<0.0002
	Aluminum (Al)	-	-	Ice-covered	mg/L	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.001	<0.001

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04	REF-05		Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
Dissolved Metals				Open-water	mg/L	0.06-0.18	<0.18	<0.15	<0.15	<0.15	<0.06	<0.06	<0.15	<0.06	<0.001	<0.001
	Antimony (Sb)	-	-	Ice-covered	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0001	<0.0001
				Open-water	mg/L	0.01-0.03	<0.03	<0.025	<0.025	<0.025	<0.01	<0.01	<0.025	<0.01	<0.0001	<0.0001
	Arsenic (As)	-	-	Ice-covered	mg/L	0.001	0.0011	0.0013	0.00115	0.0011	0.001	0.0011	0.0011	0.0011	<0.0001	<0.0001
				Open-water	mg/L	0.002-0.006	<0.006	<0.005	<0.005	<0.005	<0.002	0.0085	<0.005	<0.002	<0.0001	<0.0001
	Barium (Ba)	-	-	Ice-covered	mg/L	0.01	0.012	0.012	0.0135	0.011	0.012	0.012	0.011	0.012	0.011 to 0.0116	0.01 to 0.0107
				Open-water	mg/L	0.02-0.06	<0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	0.00931 to 0.00989	0.01
	Beryllium (Be)	-	-	Ice-covered	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001
				Open-water	mg/L	0.002-0.006	<0.006	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.0001	<0.0001
	Bismuth (Bi)	-	-	Ice-covered	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.00005	<0.00005
				Open-water	mg/L	0.02-0.06	<0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.00005	<0.00005
	Boron (B)	-	-	Ice-covered	mg/L	0.5	3.23	3.96	3.49	3.43	3.27	3.29	3.53	3.4	3.21 to 3.79	3.4 to 3.87
				Open-water	mg/L	1-3	2.1	4.3	<2.5	3.9	1.7	1.5	3.8	1.5	2.26 to 2.32	3.52
	Cadmium (Cd)	-	-	Ice-covered	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000005	<0.000005
				Open-water	mg/L	0.0002-0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	0.0000602 to 0.0000846	<0.000005
	Calcium (Ca)	-	-	Ice-covered	mg/L	0.5	305	380	334.5	314	312	307	326	317	319 to 321	328
				Open-water	mg/L	1-3	141	311	140	308	145	137	308	138	-	-
	Chromium (Cr)	-	-	Ice-covered	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0005	<0.0005
				Open-water	mg/L	0.02-0.06	<0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.0005	<0.0005
	Cobalt (Co)	-	-	Ice-covered	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0001	<0.0001
				Open-water	mg/L	0.004-0.012	<0.012	<0.01	<0.01	<0.01	<0.004	<0.004	<0.01	<0.004	<0.0001	<0.0001
	Copper (Cu)	-	-	Ice-covered	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0002	<0.0002
				Open-water	mg/L	0.004-0.012	<0.012	<0.01	<0.01	<0.01	<0.004	<0.004	<0.01	<0.004	<0.0002 to 0.00257	<0.0002

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04	REF-05		Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
	Iron (Fe)	-	-	Ice-covered	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
				Open-water	mg/L	0.1-0.3	<0.3	<0.25	<0.25	<0.25	<0.1	<0.1	<0.25	<0.1	<0.01	<0.01
	Lead (Pb)	-	-	Ice-covered	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.00005	<0.00005
				Open-water	mg/L	0.004-0.012	<0.012	<0.01	<0.01	<0.01	<0.004	<0.004	<0.01	<0.004	<0.00005	<0.00005
	Lithium (Li)	-	-	Ice-covered	mg/L	0.02	0.126	0.164	0.144	0.134	0.13	0.132	0.141	0.138	0.138 to 0.145	0.145 to 0.149
				Open-water	mg/L	0.04-0.12	0.0825	0.14	<0.1	0.16	0.064	0.062	0.14	0.062	0.0879 to 0.0894	0.134
	Magnesium (Mg)	-	-	Ice-covered	mg/L	0.5-2.5	857	939	964.5	895	866	876	948	913	977 to 998	976 to 1020
				Open-water	mg/L	1-3	440.5	962	457	1,020	439	417	952	417	612 to 628	949
	Manganese (Mn)	-	-	Ice-covered	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0001 to 0.00259	<0.0001
				Open-water	mg/L	0.02-0.06	<0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	0.00135 to 0.00153	<0.0001
	Mercury (Hg)	-	-	Open-water	mg/L	0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.000005	<0.000005
				Ice-covered	mg/L	0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.000005	<0.000005
	Molybdenum (Mo)	-	-	Ice-covered	mg/L	0.01	<0.01	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00829 to 0.00883	0.00795 to 0.00875
				Open-water	mg/L	0.02-0.06	<0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	0.0056 to 0.00573	0.00842
	Nickel (Ni)	-	-	Ice-covered	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0005	<0.0005
				Open-water	mg/L	0.02-0.06	<0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.0005	<0.0005
	Potassium (K)	-	-	Ice-covered	mg/L	0.5	286	354	318	300	288	286	309	295	307 to 319	319 to 321
				Open-water	mg/L	1-3	133	295	133	299	135	129	291	130	202 to 208	312
	Selenium (Se)	-	-	Ice-covered	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00005	<0.00005
				Open-water	mg/L	0.002-0.006	<0.006	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.00005	<0.00005
	Silicon (Si)	-	-	Ice-covered	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<0.05	<0.05
				Open-water	mg/L	2-6	<6	<5	<5	<5	<2	<2	<5	<2	<0.05	<0.05
	Silver (Ag)	-	-	Ice-covered	mg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00001	<0.00001
				Open-water	mg/L	0.0004-0.0012	<0.0012	<0.001	<0.001	<0.001	<0.0004	<0.0004	<0.001	<0.0004	<0.00001	<0.00001

Class	Parameter	CCME Guideline for Protection of Aquatic Marine Life		Season	Unit	Detection Limit	BRP-46		BRP-48		BRP-51	REF-04	REF-05		Reference Station Range (2023-2024)	
		Long Term	Short Term				Surface	Bottom	Surface	Bottom	Surface	Surface	Bottom	Surface	Surface	Bottom
	Sodium (Na)	-	-	Ice-covered	mg/L	2.5	7,600	7,910	8,055	8,140	7,850	7,790	8,010	7,880	8,050 to 8,300	8,130 to 8,560
				Open-water	mg/L	1-3	3,710	8,160	3,710	8,290	3,710	3,530	8,060	3,550	5,000 to 5,240	7,890
	Strontium (Sr)	-	-	Ice-covered	mg/L	0.01	5.54	7.16	6.18	5.80	5.69	5.73	6.10	5.78	5.72 to 5.9	5.8 to 6
				Open-water	mg/L	0.02-0.06	2.56	5.78	2.55	5.87	2.60	2.50	5.66	2.5	3.88 to 3.95	6.04
	Sulphur (S)	-	-	Ice-covered	mg/L	30	655	823	737	682	646	660	721	698	723 to 806	741 to 827
				Open-water	mg/L	60-180	323.5	738	331	735	329	315	712	314	475 to 496	734
	Thallium (Tl)	-	-	Ice-covered	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.00001
				Open-water	mg/L	0.0002-0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.00001	<0.00001
	Tin (Sn)	-	-	Ice-covered	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.0001	<0.0001
				Open-water	mg/L	0.1-0.3	<0.3	<0.25	<0.25	<0.25	<0.1	<0.1	<0.25	<0.1	<0.0001	<0.0001
	Titanium (Ti)	-	-	Ice-covered	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.0003	<0.0003
				Open-water	mg/L	0.1-0.3	<0.3	<0.25	<0.25	<0.25	<0.1	<0.1	<0.25	<0.1	<0.0003	<0.0003
	Uranium (U)	-	-	Ice-covered	mg/L	0.001	0.0022	0.0028	0.00245	0.0023	0.0022	0.0023	0.0024	0.0024	0.00226 to 0.0025	0.00236 to 0.00249
				Open-water	mg/L	0.002-0.006	<0.006	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	0.00143 to 0.00147	0.00214
	Vanadium (V)	-	-	Ice-covered	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.0005	<0.0005
				Open-water	mg/L	0.1-0.3	<0.3	<0.25	<0.25	<0.25	<0.1	<0.1	<0.25	<0.1	<0.0005	<0.0005
	Zinc (Zn)	-	-	Ice-covered	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001
				Open-water	mg/L	0.1-0.3	<0.3	<0.25	<0.25	<0.25	<0.1	<0.1	<0.25	<0.1	<0.001 to 0.0209	<0.001
	Zirconium (Zr)	-	-	Ice-covered	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002
				Open-water	mg/L	0.002-0.006	<0.006	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.0002	<0.0002

Notes:

^a: CCME guideline is classified as Interim Guideline.

^b: Detection limit exceeds guideline value.

Bold values represent guideline exceedance.

“-” indicates no applicable guideline (guideline column) or that data were not available (reference station range columns).

“<” indicates value was less than the analytical detection limit.

3.2.3 VOLATILE ORGANIC COMPOUNDS, HYDROCARBONS, AND POLYCYCLIC AROMATIC HYDROCARBONS

Concentrations of all volatile organic compounds (VOC), hydrocarbons, and polycyclic aromatic hydrocarbons (PAH) were below the detection limit in all samples collected between 2023 and 2025 (Appendix B-1). All detection limits were below applicable CCME MAL guidelines (CCME 2025).

3.2.4 DESALINATION PLANT INFLUENT AND EFFLUENT

Samples were collected from the desalination plant intake (influent; BRP-40) and end of pipe (effluent; BRP-41) by B2Gold Nunavut on seven occasions from February to November 2025 (Table 3.2-3). Influent samples were collected from the intake line, which draws water from Bathurst Inlet at a location approximately 50 m offshore of the MLA desalination plant and barge loading area.

Effluent from the desalination plant is discharged approximately 5 m offshore in the same area and approximately 45 m from the intake. The difference in salinity between the influent and effluent was always 2 psu or less and the RPD between the paired influent and effluent samples was less than 10% during all sampling events.

Table 3.2-3. Salinity of Desalination Plant Influent and Effluent, 2025.

Sampling Date	Salinity (psu)		Relative Percent Difference (%)
	BRP-40 Desalination Plant Intake	BRP-41 Desalination Plan Effluent	
2/26/2025	25	25	0.0
3/11/2025	25	25	0.0
4/15/2025	26	27	3.8
8/18/2025	12	12	0.0
9/30/2025	19	20	5.1
10/7/2025	20	22	9.5
11/4/2025	22	23	4.4

Note: psu = practical salinity units

3.2.5 QUALITY ASSURANCE AND QUALITY CONTROL

3.2.5.1 EQUIPMENT, FIELD, AND TRAVEL BLANKS

During the under-ice sampling program one field blank, two equipment blanks, and one travel blank were collected. Within the field blank, there were detections of three dissolved nutrient parameters: sulphate, nitrate as NO₃, and nitrate as N. Detections of nitrogen compounds were greater than 4-times the detection limit, indicating potential nitrogen contamination during the filtration process. Only one

parameter was detected in the travel blank (dissolved sulphate), but the concentration was within 2.5-times the detection limit and therefore considered within the range of laboratory error. An equipment blank was collected at the beginning and end of the sampling program. In the first equipment blank 12 parameters were detected, but the majority were within 2.5-times the detection limit. There were three parameters with concentrations that exceeded 2.5-times the detection limit (dissolved calcium and aluminum and total cadmium) and one parameter (total calcium) with a concentration that exceeded 5-times the detection limit in the first equipment blank. Nineteen parameters were detected in the second equipment blank. Five of the detections in the second equipment blank were within 2.5-times the detection limit and therefore considered within the analytical variance. Three parameters (total and dissolved strontium and dissolved potassium) had concentrations greater than 2.5-times the detection limit and eleven parameters (total and dissolved calcium, hardness, magnesium, and sodium; total potassium; and conductivity) had detections greater than 5-times the detection limit (Appendix B-2). Detections in the second equipment blank indicate that parameters were not completely removed during the decontamination process following sampling. These parameters were likely introduced during sampling and are not an indication of sample contamination because concentrations were much lower than in the samples collected for the MMP.

During the 2025 open-water sampling event one field blank, one equipment blank, and one travel blank were collected. Within the field blank there were detections of three parameters, with two parameters (total dissolved solids and total nitrogen) exceeding the typical analytical variance of 2.5-times the detection limit. Eight parameters were detected in the equipment blank, but only two (total and dissolved aluminum) exceeded 2.5-times the detection limit. Total and dissolved aluminum were detected at concentrations exceeding 20-times and 19-times the detections limits, respectively. However, there were no detections of total or dissolved aluminum in any of the samples collected during the first two days of sampling, so it is unlikely that the aluminum detected in the equipment blank impacted samples. Dissolved nitrogen compounds were detected in the trip blank, but concentrations were less than 2.5-times the detection limit, and therefore within the range of analytical variance.

Overall, the field and trip blank samples indicate that adequate measures were in place to ensure that samples were not contaminated in the field. While there were detections in equipment blank samples collected at the start of the program, concentrations of those parameters were either below detection or similar to concentrations measure in previous years (i.e., within the 2023-2024 reference sample range) in all samples collected on the first day of sampling, indicating that equipment contamination did not affect concentrations in the samples. Application of current protocols, including equipment decontamination will address this potential issue.

3.2.5.2 FIELD DUPLICATES

During the under-ice sampling event one field duplicate was collected at BRP-48 Surface. There was a total of 28 RPDs calculated for the under-ice duplicate sample and 26 (93%) had an RPD below 20% (Appendix B-3). RPDs greater than the data quality objective of 20% occurred for total potassium (21 %) and total strontium (21%).

During the open-water sampling event one field duplicate was collected at BRP-46 Surface. A total of 24 RPDs were calculated. RPDs greater than the data quality objective of 20% occurred for total phosphorous with an RPD of 32%, and turbidity with an RPD of 45% (Appendix B-3).

Overall, the results of the field duplicates indicate that field personnel were consistent in their sample collection methods and were successful at preventing sample contamination. Some differences in primary and duplicate samples are expected due to natural heterogeneity in the environment.

3.2.5.3 LABORATORY

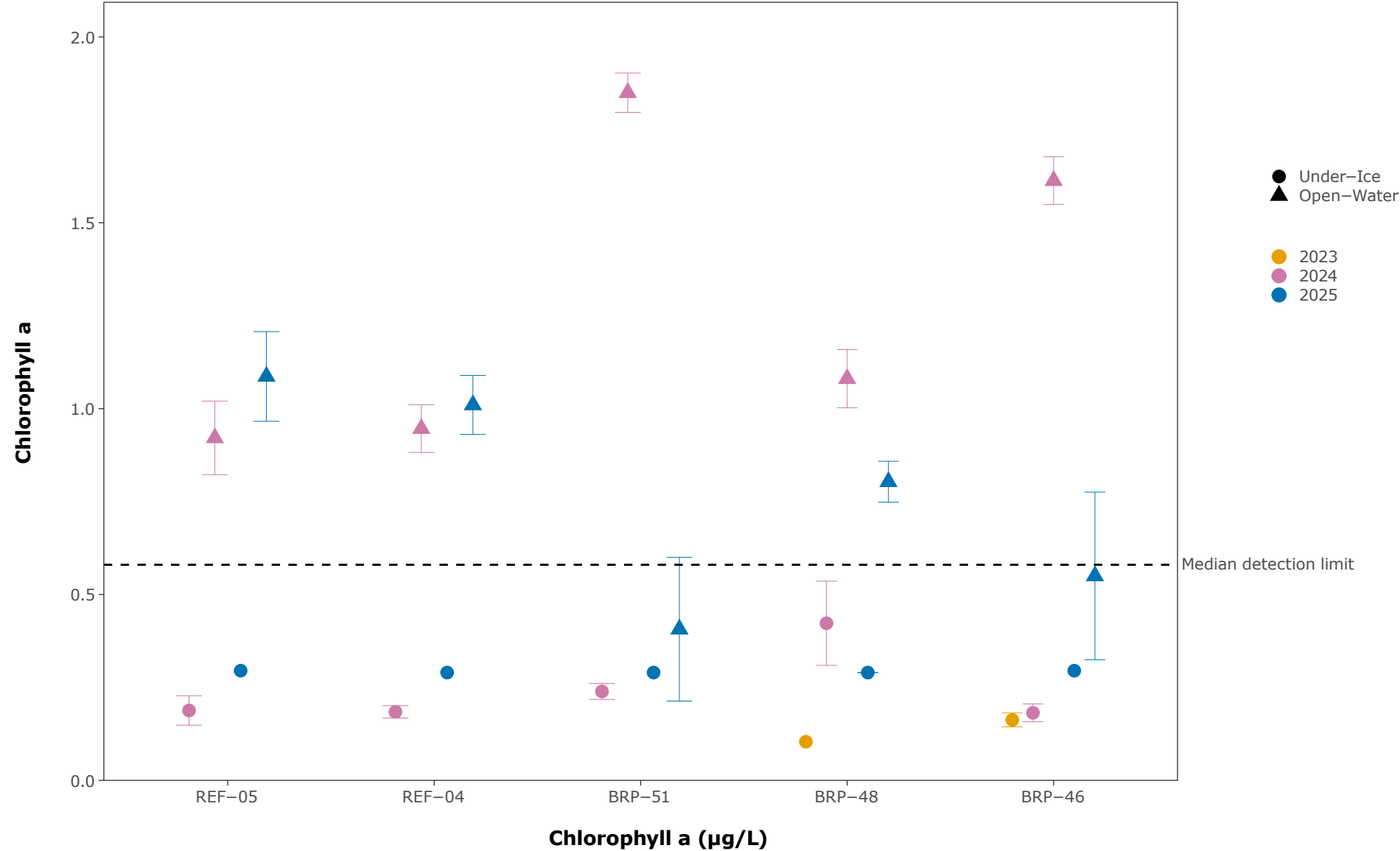
For both sampling events samples were analyzed within their recommended holding times, except for nitrogen compounds and orthophosphate, which have a recommended holding time of three days. Actual holding times for nitrogen compounds and orthophosphate ranged from 3 to 8 days. Turbidity and pH also exceeded their holding times but were also measured in the field. For parameters with short holding times it is not possible or practical to meet the holding time when shipping from a remote location.

3.3 PHYTOPLANKTON

Concentrations of chl-*a* in samples collected during the 2025 under-ice sampling program were below the detection limit in all samples (Figure 3.2-1). Low chl-*a* concentrations during under-ice sampling are consistent with results from previous years. Low concentrations of chl-*c* (less than 1.5 µg/L) were detected in samples collected at BRP-46 and BRP-51 (Appendix C), and a low concentration of pheophytin-*a* was detected in samples collected at BRP-48 (Appendix C).

During the 2025 open-water sampling program, chl-*a* concentrations were low (less than 2.0 µg/L) in all samples (Figure 3.2-1) and concentrations of chl-*c* and pheophytin-*a* were below the detection limit (Appendix C). On average, chl-*a* concentrations were lower at MLA stations (BRP-51, BRP-48, BRP-46) compared to reference stations (REF-05 and REF-04) during the open-water season in 2025, whereas during the open water season in 2024 the reverse was observed (Figure 3.2-1). Chl-*a* concentrations observed in reference stations during the open-water season 2025 were similar to concentrations observed during the open-water season in 2024.

FIGURE 3.3-1 CHLOROPHYLL A CONCENTRATIONS, MARINE MONITORING PROGRAM STATIONS, 2023–2025



Notes: Values below the detection limit were plotted as half the detection limit.



4. CONCLUSIONS AND RECOMMENDATIONS

Overall, there was no strong evidence of Project-related effects on physical oceanography, water quality, and phytoplankton at MLA stations relative to the reference stations. However, there remains some uncertainty in the conclusion because detection limits for many metals were higher than the target detection limits in the MMP. For subsequent MMP sampling programs, samples will be analyzed at a laboratory that can achieve detection limits that are lower than the CCME MAL guidelines and align with the target detection limits in the MMP.

5. REFERENCES

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APPENDIX A: PHYSICAL OCEANOGRAPHY RESULTS

APPENDIX A-1: PHYSICAL OCEANOGRAPHY PROFILES, 2025

Figure 1: Physical Oceanography Profiles, 2025

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-46	10-Apr-2025	0.1	-1.4	101.8	13.20	37287	7.38	0	22.38
BRP-46	10-Apr-2025	0.5	-1.4	98.2	12.73	37449	7.42	0	22.46
BRP-46	10-Apr-2025	1.0	-1.4	97.1	12.58	37515	7.44	0	22.51
BRP-46	10-Apr-2025	1.5	-1.4	96.9	12.55	37748	7.46	0	22.66
BRP-46	10-Apr-2025	2.0	-1.4	96.8	12.54	37772	7.46	0	22.68
BRP-46	10-Apr-2025	2.5	-1.4	96.7	12.52	37798	7.47	0	22.70
BRP-46	10-Apr-2025	3.0	-1.4	96.7	12.52	37823	7.47	0	22.71
BRP-46	10-Apr-2025	3.5	-1.4	96.6	12.50	37858	7.47	0	22.73
BRP-46	10-Apr-2025	4.0	-1.4	96.4	12.48	37885	7.48	0	22.75
BRP-46	10-Apr-2025	4.5	-1.4	96.3	12.46	37953	7.48	0	22.80
BRP-46	10-Apr-2025	5.0	-1.4	96.3	12.46	38012	7.48	0	22.83
BRP-46	10-Apr-2025	5.5	-1.2	95.9	12.34	38062	7.46	0	22.90
BRP-46	10-Apr-2025	6.0	-0.1	78.1	9.44	41453	7.23	0	25.42
BRP-46	10-Apr-2025	6.5	0.4	75.1	9.06	41949	7.17	0	25.81
BRP-46	10-Apr-2025	7.0	0.5	73.1	8.80	42358	7.13	0	26.06
BRP-46	10-Apr-2025	7.5	0.4	72.6	8.73	42601	7.15	0	26.22
BRP-46	10-Apr-2025	8.0	0.4	71.4	8.59	42868	7.16	0	26.38
BRP-46	10-Apr-2025	8.5	0.3	70.4	8.48	42999	7.18	0	26.47

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-46	10-Apr-2025	9.0	0.3	68.6	8.28	43204	7.18	0	26.59
BRP-46	10-Apr-2025	9.5	0.2	67.9	8.18	43379	7.17	0	26.70
BRP-46	10-Apr-2025	10.0	0.2	70.1	8.08	43514	7.17	0.53	26.77
BRP-46	10-Apr-2025	10.5	0.1	66.7	8.06	43610	7.17	0	26.83
BRP-46	10-Apr-2025	11.0	0.1	66.1	7.99	43669	7.18	0	26.86
BRP-46	10-Apr-2025	11.5	0.1	65.8	7.95	43691	7.19	0	26.88
BRP-46	10-Apr-2025	12.0	0.0	65.8	7.96	43744	7.20	0	26.91
BRP-46	10-Apr-2025	12.5	0.0	65.7	7.96	43770	7.21	0	26.92
BRP-46	10-Apr-2025	13.0	0.0	65.7	7.95	43792	7.22	0	26.93
BRP-46	10-Apr-2025	13.5	0.0	65.4	7.92	43808	7.22	0	26.94
BRP-46	10-Apr-2025	14.0	0.0	65.4	7.93	43844	7.23	0	26.96
BRP-46	10-Apr-2025	14.5	0.0	65.0	7.87	43885	7.24	0	26.98
BRP-46	10-Apr-2025	15.0	-0.1	65.2	7.91	43958	7.26	0	27.03
BRP-46	10-Apr-2025	15.5	-0.1	64.8	7.87	44001	7.26	0	27.05
BRP-46	10-Apr-2025	16.0	-0.1	64.5	7.83	44022	7.26	0	27.06
BRP-46	10-Apr-2025	16.5	-0.1	64.2	7.79	44038	7.27	0	27.07
BRP-46	10-Apr-2025	17.0	-0.1	63.9	7.75	44049	7.27	0	27.07
BRP-48	10-Apr-2025	0.1	-1.4	96.8	12.32	41564	7.63	0	25.17
BRP-48	10-Apr-2025	0.5	-1.4	96.6	12.29	41540	7.63	0	25.16

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-48	10-Apr-2025	1.0	-1.4	96.6	12.30	41544	7.63	0	25.16
BRP-48	10-Apr-2025	1.5	-1.4	96.6	12.30	41543	7.63	0	25.16
BRP-48	10-Apr-2025	2.0	-1.4	96.6	12.29	41545	7.64	0	25.16
BRP-48	10-Apr-2025	2.5	-1.4	96.6	12.29	41544	7.64	0	25.16
BRP-48	10-Apr-2025	3.0	-1.4	96.6	12.27	41541	7.64	0	25.15
BRP-48	10-Apr-2025	3.5	-1.4	96.6	12.29	41544	7.64	0	25.16
BRP-48	10-Apr-2025	4.0	-1.3	96.1	12.22	41552	7.63	0	25.17
BRP-48	10-Apr-2025	4.5	-1.3	95.7	12.16	41565	7.63	0	25.17
BRP-48	10-Apr-2025	5.0	-0.5	78.0	9.65	41648	7.54	0	25.41
BRP-48	10-Apr-2025	5.5	0.4	73.5	8.87	42197	7.49	0	25.94
BRP-48	10-Apr-2025	6.0	0.5	73.9	8.77	42587	7.49	0	26.21
BRP-48	10-Apr-2025	6.5	0.4	71.7	8.63	42859	7.48	0	26.38
BRP-48	10-Apr-2025	7.0	0.4	70.6	8.50	43004	7.47	0	26.47
BRP-48	10-Apr-2025	7.5	0.3	69.1	8.33	43146	7.45	0	26.56
BRP-48	10-Apr-2025	8.0	0.3	68.1	8.21	43247	7.45	0	26.62
BRP-48	10-Apr-2025	8.5	0.3	67.9	8.18	43294	7.44	0	26.64
BRP-48	10-Apr-2025	9.0	0.2	67.1	8.10	43466	7.43	0	26.75
BRP-48	10-Apr-2025	9.5	0.2	66.8	8.06	43554	7.43	0	26.80
BRP-48	10-Apr-2025	10.0	0.1	66.4	8.01	43611	7.43	0	26.83

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-48	10-Apr-2025	10.5	0.0	66.0	7.98	43784	7.43	0	26.93
BRP-48	10-Apr-2025	11.0	0.0	65.9	7.97	43790	7.43	0	26.94
BRP-48	10-Apr-2025	11.5	0.0	65.6	7.95	43838	7.43	0	26.96
BRP-48	10-Apr-2025	12.0	0.0	65.5	7.93	43844	7.42	0	26.97
BRP-48	10-Apr-2025	12.5	0.0	65.3	7.91	43907	7.42	0	27.00
BRP-48	10-Apr-2025	13.0	-0.1	65.0	7.88	43954	7.42	0	27.03
BRP-48	10-Apr-2025	13.5	-0.1	65.0	7.89	43975	7.42	0	27.04
BRP-48	10-Apr-2025	14.0	-0.1	65.3	7.93	43998	7.43	0	27.05
BRP-48	10-Apr-2025	14.5	-0.1	65.2	7.91	44001	7.43	0	27.05
BRP-48	10-Apr-2025	15.0	-0.1	64.9	7.87	44040	7.42	0	27.07
BRP-48	10-Apr-2025	15.5	-0.1	63.9	7.76	44063	7.41	0	27.07
BRP-48	10-Apr-2025	16.0	-0.1	63.5	7.71	44080	7.41	0	27.10
BRP-48	10-Apr-2025	16.5	-0.1	63.4	7.69	44102	7.41	0	27.11
BRP-48	10-Apr-2025	17.0	-0.2	62.6	7.61	44220	7.40	2.86	27.12
REF-04	11-Apr-2025	0.1	-1.3	98.2	12.48	41553	7.59	0	25.17
REF-04	11-Apr-2025	0.5	-1.4	98.2	12.50	41576	7.61	0	25.18
REF-04	11-Apr-2025	1.0	-1.4	98.3	12.50	41566	7.61	0	25.18
REF-04	11-Apr-2025	1.5	-1.4	98.3	12.51	41580	7.62	0	25.17
REF-04	11-Apr-2025	2.0	-1.4	98.3	12.50	41564	7.62	0	25.17

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
REF-04	11-Apr-2025	2.5	-1.4	98.4	12.52	41586	7.63	0	25.18
REF-04	11-Apr-2025	3.0	-1.4	98.3	12.51	41588	7.63	0	25.19
REF-04	11-Apr-2025	3.5	-1.4	97.9	12.45	41579	7.62	0	25.18
REF-04	11-Apr-2025	4.0	-1.4	97.8	12.43	41592	7.62	0	25.19
REF-04	11-Apr-2025	4.5	-1.4	97.9	12.45	41604	7.63	0	25.20
REF-04	11-Apr-2025	5.0	-1.3	98.1	12.46	41599	7.63	0	25.20
REF-04	11-Apr-2025	5.5	-1.2	98.4	12.46	41575	7.63	0	25.21
REF-04	11-Apr-2025	6.0	-0.3	77.6	9.54	42152	7.51	0	25.77
REF-04	11-Apr-2025	6.5	0.4	75.4	9.05	42452	7.48	0	26.11
REF-04	11-Apr-2025	7.5	0.4	73.0	8.78	42976	7.46	0	26.45
REF-04	11-Apr-2025	8.5	0.2	68.5	8.26	43565	7.41	0	26.81
REF-04	11-Apr-2025	9.5	0.1	67.5	8.16	43727	7.41	0	26.91
REF-04	11-Apr-2025	10.5	0.0	67.1	8.12	43846	7.41	0	26.97
REF-04	11-Apr-2025	11.5	0.0	67.0	8.11	43907	7.41	0	27.00
REF-04	11-Apr-2025	12.5	-0.1	66.7	8.08	43965	7.41	0	27.04
REF-04	11-Apr-2025	13.5	-0.1	66.4	8.05	43971	7.41	0	27.04
REF-04	11-Apr-2025	14.5	-0.1	66.2	8.03	44063	7.41	0	27.09
REF-04	11-Apr-2025	15.5	-0.1	66.2	8.04	44089	7.42	0	27.11
REF-04	11-Apr-2025	15.9	-0.1	66.3	8.05	44111	7.42	8.42	27.12

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
REF-05	11-Apr-2025	0.1	-1.4	98.4	12.50	41677	7.62	0	25.25
REF-05	11-Apr-2025	0.5	-1.4	98.3	12.51	41592	7.62	0	25.19
REF-05	11-Apr-2025	1.0	-1.4	98.3	12.50	41581	7.62	0	25.18
REF-05	11-Apr-2025	1.5	-1.4	98.3	12.50	41579	7.62	0	25.18
REF-05	11-Apr-2025	2.0	-1.4	98.3	12.50	41571	7.62	0	25.18
REF-05	11-Apr-2025	2.5	-1.4	98.2	12.50	41584	7.62	0	25.18
REF-05	11-Apr-2025	3.0	-1.4	98.3	12.51	41577	7.62	0	25.18
BRP-51	11-Apr-2025	0.1	-1.4	96.3	12.25	41603	7.60	0	25.20
BRP-51	11-Apr-2025	0.5	-1.4	96.0	12.20	41584	7.61	0	25.18
BRP-51	11-Apr-2025	1.0	-1.4	95.9	12.20	41583	7.61	0	25.18
BRP-51	11-Apr-2025	1.5	-1.4	95.9	12.19	41584	7.62	0	25.19
BRP-51	11-Apr-2025	2.0	-1.4	95.8	12.19	41850	7.62	0	25.18
BRP-51	11-Apr-2025	2.5	-1.4	96.0	12.20	41856	7.62	0	25.19
BRP-51	11-Apr-2025	3.0	-1.4	96.1	12.21	41605	7.62	0	25.20
BRP-51	11-Apr-2025	3.5	-1.4	96.2	12.23	41603	7.63	0	25.20
BRP-51	11-Apr-2025	4.0	-1.3	96.6	12.27	41601	7.63	0	25.20
BRP-51	11-Apr-2025	4.5	-1.3	96.6	12.25	41559	7.63	0	25.19
BRP-51	11-Apr-2025	5.0	-0.9	89.6	11.24	41593	7.59	0	25.26
BRP-51	11-Apr-2025	5.5	0.2	76.3	9.25	41856	7.49	0	25.70

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-51	11-Apr-2025	6.0	0.3	72.8	8.79	42272	7.47	0	25.98
BRP-51	11-Apr-2025	6.5	0.4	72.0	8.69	42315	7.46	4.23	26.01
REF-05	20-Aug-25	0.1	13.2	100.2	9.81	18880	7.65	1.36	12.08
REF-05	20-Aug-25	0.5	13.2	101.5	9.90	18849	7.87	1.54	12.06
REF-05	20-Aug-25	1.0	13.3	101.2	9.88	18884	7.85	1.28	12.09
REF-05	20-Aug-25	1.5	13.2	100.8	9.85	18932	7.85	1.35	12.12
REF-05	20-Aug-25	2.0	12.8	100.6	9.82	20137	7.80	0.62	12.89
REF-05	20-Aug-25	2.5	12.8	100.0	9.82	20235	7.80	0.60	12.95
REF-05	20-Aug-25	3.0	12.7	99.8	9.81	20304	7.80	0.59	12.99
REF-05	20-Aug-25	3.5	12.5	99.4	9.81	20461	7.79	0.53	13.10
REF-05	20-Aug-25	4.0	12.2	99.2	9.83	20945	7.79	0.59	13.40
REF-05	20-Aug-25	4.5	12.2	99.2	9.83	21071	7.79	0.61	13.49
REF-05	20-Aug-25	5.0	12.1	99.2	9.84	21109	7.79	0.87	13.51
REF-04	20-Aug-25	0.1	13.3	100.2	9.82	18964	7.83	1.26	12.14
REF-04	20-Aug-25	0.5	13.4	100.5	9.79	18940	7.82	0.96	12.12
REF-04	20-Aug-25	1.0	13.4	100.5	9.80	18931	7.82	1.00	12.12
REF-04	20-Aug-25	1.5	13.2	100.5	9.81	18971	7.82	1.10	12.14
REF-04	20-Aug-25	2.0	12.8	100.2	9.83	20334	7.80	0.61	13.01
REF-04	20-Aug-25	2.5	12.7	100.2	9.83	20435	7.80	0.58	13.08

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
REF-04	20-Aug-25	3.0	12.7	100.2	9.84	20496	7.80	0.64	13.12
REF-04	20-Aug-25	3.5	12.3	100.0	9.86	20985	7.78	0.60	13.43
REF-04	20-Aug-25	4.0	12.3	99.6	9.86	21084	7.79	0.60	13.49
REF-04	20-Aug-25	5.0	12.1	99.8	9.86	21297	7.78	0.69	13.63
REF-04	20-Aug-25	6.0	10.7	99.5	9.90	22680	7.75	0.76	14.52
REF-04	20-Aug-25	7.0	10.6	97.3	9.81	23428	7.73	0.70	14.99
REF-04	20-Aug-25	8.0	10.5	96.3	9.80	23466	7.73	0.65	15.02
REF-04	20-Aug-25	9.0	8.5	96.2	9.76	26554	7.69	0.65	16.99
REF-04	20-Aug-25	10.0	7.7	92.9	9.59	27845	7.65	0.79	17.82
REF-04	20-Aug-25	11.0	6.4	89.9	9.43	30761	7.60	0.85	19.69
REF-04	20-Aug-25	12.0	5.8	84.5	9.28	31754	7.60	0.99	20.32
REF-04	20-Aug-25	13.0	4.5	81.2	9.11	34382	7.56	0.76	22.00
REF-04	20-Aug-25	14.0	3.8	78.9	8.95	35913	7.54	0.58	22.98
REF-04	20-Aug-25	15.0	2.9	75.9	8.73	37990	7.51	0.53	24.31
BRP-51	21-Aug-25	0.1	13.1	103.7	10.17	18323	7.78	3.48	11.73
BRP-51	21-Aug-25	0.5	13.2	103.5	10.15	18307	7.78	3.59	11.72
BRP-51	21-Aug-25	1.0	13.2	103.4	10.14	18311	7.79	4.02	11.72
BRP-51	21-Aug-25	1.5	13.2	103.2	10.13	18304	7.79	3.94	11.71
BRP-51	21-Aug-25	2.0	13.2	103.1	10.11	18304	7.79	3.85	11.71

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-51	21-Aug-25	2.5	13.2	103.0	10.11	18307	7.79	4.01	11.72
BRP-46	21-Aug-25	0.1	13.2	101.8	9.99	18236	7.71	5.73	11.67
BRP-46	21-Aug-25	1.0	13.2	101.9	9.99	18273	7.73	5.76	11.69
BRP-46	21-Aug-25	2.0	13.0	101.6	9.99	18297	7.75	8.35	11.71
BRP-46	21-Aug-25	3.0	13.0	103.6	10.18	18716	7.79	2.63	11.98
BRP-46	21-Aug-25	4.0	12.7	103.2	10.22	18956	7.79	0.92	12.13
BRP-46	21-Aug-25	5.0	12.6	103.3	10.23	19069	7.79	0.93	12.20
BRP-46	21-Aug-25	6.0	12.5	103.2	10.24	19163	7.79	0.78	12.26
BRP-46	21-Aug-25	7.0	12.4	103.8	10.24	19259	7.79	0.87	12.33
BRP-46	21-Aug-25	8.0	11.5	101.6	10.20	20319	7.75	1.09	13.00
BRP-46	21-Aug-25	9.0	6.6	90.9	9.94	27886	7.60	1.03	17.85
BRP-46	21-Aug-25	10.0	5.1	85.9	9.64	31077	7.53	1.00	19.89
BRP-46	21-Aug-25	11.0	3.3	80.4	9.28	36407	7.49	0.65	23.30
BRP-46	21-Aug-25	12.0	2.9	77.9	9.06	35467	7.49	0.79	22.70
BRP-46	21-Aug-25	13.0	2.4	75.6	8.88	36613	7.47	0.66	23.43
BRP-46	21-Aug-25	14.0	1.8	73.2	8.66	37748	7.47	0.45	24.16
BRP-46	21-Aug-25	15.0	1.6	71.6	8.52	38372	7.46	0.51	24.56
BRP-46	21-Aug-25	16.0	1.4	70.0	8.35	38917	7.46	0.56	24.91
BRP-48	22-Aug-25	0.1	13.8	103.2	9.94	19739	7.65	6.54	12.63

Station	Date	Depth (m)	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm @25°C)	pH	Turbidity (NTU)	Salinity (psu)
BRP-48	22-Aug-25	1.0	13.3	102.4	9.95	19864	7.64	5.47	12.71
BRP-48	22-Aug-25	2.0	13.3	102.2	9.94	19937	7.63	5.54	12.76
BRP-48	22-Aug-25	3.0	12.6	101.5	10.01	20441	7.63	2.20	13.08
BRP-48	22-Aug-25	4.0	12.3	101.2	10.01	20594	7.63	2.22	13.18
BRP-48	22-Aug-25	5.0	11.5	99.5	9.97	21541	7.58	0.96	13.79
BRP-48	22-Aug-25	6.0	9.1	95.2	9.90	25980	7.50	0.79	16.63
BRP-48	22-Aug-25	7.0	7.5	90.9	9.72	28090	7.44	0.59	17.98
BRP-48	22-Aug-25	8.0	7.1	88.8	9.58	28932	7.45	0.75	18.52
BRP-48	22-Aug-25	9.0	6.2	86.2	9.43	30409	7.41	0.58	19.46
BRP-48	22-Aug-25	10.0	5.3	84.1	9.34	32334	7.41	0.77	20.69
BRP-48	22-Aug-25	11.0	4.3	81.6	9.19	34619	7.39	0.54	22.16
BRP-48	22-Aug-25	12.0	3.7	78.4	8.93	35449	7.38	0.54	22.69
BRP-48	22-Aug-25	13.0	3.5	78.2	8.92	36339	7.37	0.48	23.26
BRP-48	22-Aug-25	14.0	2.5	74.3	8.52	38214	7.33	0.42	24.46
BRP-48	22-Aug-25	15.0	0.4	68.9	8.20	43421	7.28	0.47	27.79
BRP-48	22-Aug-25	16.0	0.3	65.7	7.88	43542	7.26	0.25	27.87
BRP-48	22-Aug-25	17.0	0.2	64.4	7.75	43754	7.28	0.39	28.00

Note:

"-" indicates data were not available.

In august, salinity was estimated from specific conductivity us the following equation: Salinity (psu)= 0.00064 * Specific Conductivity (µS/cm).

APPENDIX A-2: ICE-COVERED SEASON WATER DEPTH AND ICE THICKNESS, APRIL 2025

Figure 1: Ice-covered Season Water Depth and Ice Thickness, April 2025

Station	Date	Ice Thickness (cm)	Snow Cover (cm)	Height of Water from Ice (cm)	Total Water Depth (m)
REF-05	11-Apr-25	134	10	9	4.3
REF-04	11-Apr-25	134	13	15	15.9
BRP-51	11-Apr-25	134	10	10	7.6
BRP-48	10-Apr-25	144	10	15	18.3
BRP-46	10-Apr-25	142	10	15	17.0

APPENDIX B: WATER QUALITY RESULTS

APPENDIX B-1: WATER QUALITY ANALYTICAL RESULTS, 2025

Figure 1: Water Quality Analytical Results, 2025

Class	Parameter	Submatrix	Site	BRP-46 Surface	BRP-46 Bottom	BRP-48 Surface	BRP-48 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-48 Surface	BRP-46 Surface	BRP-46 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-46 Surface	BRP-48 Surface	BRP-48 Bottom
			Date	2025-04-10	2025-04-10	2025-04-10	2025-04-10	2025-04-11	2025-04-11	2025-04-11	2025-04-11	2025-04-10	2025-08-21	2025-08-21	2025-08-21	2025-08-20	2025-08-20	2025-08-20	2025-08-21	2025-08-22	2025-08-22
			Lab Sample ID	DID413	DID414	DID415	DID416	DID417	DID418	DID419	DID420	DID421	DRM804	DRM805	DRM806	DRM807	DRM808	DRM809	DRM812	DRS404	DRS405
			Detection Limit																		
Anions and Nutrients	Alkalinity (PP as CaCO3)	General	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Anions and Nutrients	Alkalinity (Total as CaCO3)	General	1	100	100	100	100	98	99	100	100	100	52	100	54	53	98	52	53	54	100
Anions and Nutrients	Ammonia (N)	Total	0.005-0.02	0.13	0.11	<0.02	0.11	0.13	0.097	0.21	0.15	<0.02	<0.005	0.025	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.046
Anions and Nutrients	Bicarbonate (HCO3)	General	1	120	120	120	120	120	120	130	120	120	63	130	65	65	120	63	65	65	130
Anions and Nutrients	Bromide (Br)	Dissolved	0.2-0.5	52	54	53	56	52	52	55	53	53	23	52	23	23	50	23	23	24	53
Anions and Nutrients	Carbonate (CO3)	General	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Anions and Nutrients	Chloride (Cl)	Dissolved	100	14000	15000	14000	15000	14000	14000	14000	13000	14000	-	-	-	-	-	-	-	-	-
Anions and Nutrients	Fluoride (F)	Dissolved	0.05	0.71	0.72	0.7	0.72	0.7	0.71	0.74	0.71	0.71	0.38	0.63	0.38	0.36	0.64	0.38	0.38	0.39	0.67
Anions and Nutrients	Hydroxide (OH)	General	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Anions and Nutrients	Nitrate (N)	Dissolved	0.003-0.3	0.035	0.053	0.035	0.06	0.036	0.023	0.041	0.023	<0.015	<0.075	0.024	0.0032	<0.015	<0.03	<0.003	<0.015	<0.075	<0.03
Anions and Nutrients	Nitrate (NO3)	Dissolved	0.013-1.3	0.16	0.23	0.16	0.27	0.16	0.1	0.18	0.1	<0.066	<0.33	0.11	0.014	<0.066	<0.13	<0.013	<0.066	<0.33	<0.13
Anions and Nutrients	Nitrate plus Nitrite (N)	Dissolved	0.003-0.3	0.035	0.053	0.035	0.06	0.036	0.023	0.041	0.023	<0.015	<0.075	0.024	0.0032	<0.015	<0.03	<0.003	<0.015	<0.075	<0.03
Anions and Nutrients	Nitrite (N)	Dissolved	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Anions and Nutrients	Nitrite (NO2)	Dissolved	0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033
Anions and Nutrients	Nitrogen (N)	Total	0.02-0.1	0.23	0.2	0.23	0.23	0.22	0.23	0.2	0.22	0.2	0.11	0.13	0.058	0.098	<0.1	0.048	0.097	0.12	0.1
Anions and Nutrients	Orthophosphate (P)	General	0.001	0.031	0.043	0.031	0.044	0.032	0.031	0.045	0.031	0.031	0.0049	0.043	0.0047	0.0042	0.04	0.0046	0.0044	0.0062	0.045
Anions and Nutrients	Phosphorus (P)	Total	0.001	0.029	0.037	0.029	0.038	0.028	0.028	0.039	0.027	0.03	0.008	0.037	0.0076	0.0068	0.033	0.0047	0.011	0.014	0.04
Anions and Nutrients	Sulphate (SO4)	Dissolved	13	1900	2100	2000	2100	1900	1900	2000	2000	2000	-	-	-	-	-	-	-	-	-
Carbon	Dissolved Organic Carbon (C)	Dissolved	0.2-10	140	150	140	140	130	130	150	150	140	1.6	0.94	1.7	1.5	0.95	1.8	1.5	0.42	1.2

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Class	Parameter	Submatrix	Site	BRP-46 Surface	BRP-46 Bottom	BRP-48 Surface	BRP-48 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-48 Surface	BRP-46 Surface	BRP-46 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-46 Surface	BRP-48 Surface	BRP-48 Bottom	
			Date	2025-04-10	2025-04-10	2025-04-10	2025-04-10	2025-04-11	2025-04-11	2025-04-11	2025-04-11	2025-04-10	2025-08-21	2025-08-21	2025-08-21	2025-08-20	2025-08-20	2025-08-20	2025-08-20	2025-08-21	2025-08-22	2025-08-22
			Lab Sample ID	DID413	DID414	DID415	DID416	DID417	DID418	DID419	DID420	DID421	DRM804	DRM805	DRM806	DRM807	DRM808	DRM809	DRM812	DRS404	DRS405	
			Detection Limit																			
Total Metals	Lead (Pb)	Total	0.01-0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	
Total Metals	Lithium (Li)	Total	0.1-0.2	0.17	0.16	0.15	<0.2	0.16	0.16	0.15	0.16	0.17	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	0.13	
Total Metals	Magnesium (Mg)	Total	2.5-5	1170	1020	965	995	1070	1060	984	1030	1170	450	942	452	435	930	443	450	457	1000	
Total Metals	Manganese (Mn)	Total	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	
Total Metals	Mercury (Hg)	Total	0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	<0.00000 19	
Total Metals	Molybdenum (Mo)	Total	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	
Total Metals	Nickel (Ni)	Total	0.05-0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	
Total Metals	Potassium (K)	Total	2.5-5	358	311	293	294	328	323	302	312	360	129	275	135	130	268	126	129	137	302	
Total Metals	Selenium (Se)	Total	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	
Total Metals	Silicon (Si)	Total	5-10	<5	<5	<5	<10	<5	<5	<5	<5	<5	<10	<10	<10	<10	<10	<10	<10	<5	<5	
Total Metals	Silver (Ag)	Total	0.001-0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	
Total Metals	Sodium (Na)	Total	2.5-5	9780	8480	8110	8190	8890	8870	8130	8550	9730	3630	7830	3810	3670	7640	3580	3610	3710	8230	
Total Metals	Strontium (Sr)	Total	0.05-0.1	6.96	6.05	5.63	5.74	6.32	6.17	5.95	6.05	6.93	2.48	5.5	2.52	2.45	5.34	2.48	2.5	2.76	5.83	
Total Metals	Sulphur (S)	Total	150-300	881	775	728	722	807	784	756	769	896	<300	616	344	338	611	<300	<300	326	731	
Total Metals	Thallium (Tl)	Total	0.0005-0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	
Total Metals	Tin (Sn)	Total	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.25	<0.25	
Total Metals	Titanium (Ti)	Total	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.25	<0.25	
Total Metals	Uranium (U)	Total	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	
Total Metals	Vanadium (V)	Total	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.25	<0.25	
Total Metals	Zinc (Zn)	Total	0.25-0.5	<0.25	<0.25	<0.25	<0.5	<0.25	<0.25	<0.25	<0.25	<0.25	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.25	<0.25	

Class	Parameter	Submatrix	Site	BRP-46 Surface	BRP-46 Bottom	BRP-48 Surface	BRP-48 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-48 Surface	BRP-46 Surface	BRP-46 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-46 Surface	BRP-48 Surface	BRP-48 Bottom
			Date	2025-04-10	2025-04-10	2025-04-10	2025-04-10	2025-04-11	2025-04-11	2025-04-11	2025-04-11	2025-04-10	2025-08-21	2025-08-21	2025-08-21	2025-08-20	2025-08-20	2025-08-20	2025-08-21	2025-08-22	2025-08-22
			Lab Sample ID	DID413	DID414	DID415	DID416	DID417	DID418	DID419	DID420	DID421	DRM804	DRM805	DRM806	DRM807	DRM808	DRM809	DRM812	DRS404	DRS405
			Detectio n Limit																		
Total Metals	Zirconium (Zr)	Total	0.005-0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005
Dissolved Metals	Aluminum (Al)	Dissolved	0.03-0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.06	<0.15	<0.06	<0.06	<0.15	<0.06	<0.3	<0.15	<0.15
Dissolved Metals	Antimony (Sb)	Dissolved	0.005-0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.025	<0.01	<0.01	<0.025	<0.01	<0.05	<0.025	<0.025
Dissolved Metals	Arsenic (As)	Dissolved	0.001-0.01	0.0011	0.0013	0.0011	0.0011	0.001	0.0011	0.0011	0.0011	0.0012	<0.002	<0.005	<0.002	0.0085	<0.005	<0.002	<0.01	<0.005	<0.005
Dissolved Metals	Barium (Ba)	Dissolved	0.01-0.1	0.012	0.012	0.013	0.011	0.012	0.012	0.011	0.012	0.014	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.1	<0.05	<0.05
Dissolved Metals	Beryllium (Be)	Dissolved	0.001-0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.005	<0.002	<0.01	<0.005	<0.005
Dissolved Metals	Bismuth (Bi)	Dissolved	0.01-0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.1	<0.05	<0.05
Dissolved Metals	Boron (B)	Dissolved	0.5-5	3.23	3.96	3.41	3.43	3.27	3.29	3.53	3.4	3.57	1.7	4.3	1.7	1.5	3.8	1.5	<5	<2.5	3.9
Dissolved Metals	Cadmium (Cd)	Dissolved	0.0001-0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0005	<0.0005
Dissolved Metals	Calcium (Ca)	Dissolved	0.5-5	305	380	323	314	312	307	326	317	346	142	311	145	137	308	138	140	140	308
Dissolved Metals	Chromium (Cr)	Dissolved	0.01-0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.1	<0.05	<0.05
Dissolved Metals	Cobalt (Co)	Dissolved	0.002-0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.01	<0.004	<0.004	<0.01	<0.004	<0.02	<0.01	<0.01
Dissolved Metals	Copper (Cu)	Dissolved	0.002-0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.01	<0.004	<0.004	<0.01	<0.004	<0.02	<0.01	<0.01
Dissolved Metals	Iron (Fe)	Dissolved	0.05-0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.25	<0.1	<0.1	<0.25	<0.1	<0.5	<0.25	<0.25
Dissolved Metals	Lead (Pb)	Dissolved	0.002-0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.01	<0.004	<0.004	<0.01	<0.004	<0.02	<0.01	<0.01
Dissolved Metals	Lithium (Li)	Dissolved	0.02-0.2	0.126	0.164	0.136	0.134	0.13	0.132	0.141	0.138	0.152	0.065	0.14	0.064	0.062	0.14	0.062	<0.2	<0.1	0.16
Dissolved Metals	Magnesium (Mg)	Dissolved	0.5-5	857	939	919	895	866	876	948	913	1010	434	962	439	417	952	417	447	457	1020
Dissolved Metals	Manganese (Mn)	Dissolved	0.01-0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.1	<0.05	<0.05
Dissolved Metals	Mercury (Hg)	Dissolved	0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Dissolved Metals	Molybdenum (Mo)	Dissolved	0.01-0.1	<0.01	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.1	<0.05	<0.05

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Class	Parameter	Submatrix	Site	BRP-46 Surface	BRP-46 Bottom	BRP-48 Surface	BRP-48 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-48 Surface	BRP-46 Surface	BRP-46 Bottom	BRP-51 Surface	REF-04 Surface	REF-04 Bottom	REF-05 Surface	BRP-46 Surface	BRP-48 Surface	BRP-48 Bottom	
			Date	2025-04-10	2025-04-10	2025-04-10	2025-04-10	2025-04-11	2025-04-11	2025-04-11	2025-04-11	2025-04-11	2025-04-10	2025-08-21	2025-08-21	2025-08-21	2025-08-20	2025-08-20	2025-08-20	2025-08-21	2025-08-22	2025-08-22
			Lab Sample ID	DID413	DID414	DID415	DID416	DID417	DID418	DID419	DID420	DID421	DRM804	DRM805	DRM806	DRM807	DRM808	DRM809	DRM812	DRS404	DRS405	
			Detectio n Limit																			
PAH	Low Molecular Weight PAH` s	General	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
PAH	Naphthalene	General	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
PAH	Perylene	General	0.00005	-	-	-	-	-	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		
PAH	Phenanthrene	General	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		
PAH	Pyrene	General	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
PAH	Quinoline	General	0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025		
PAH	Total PAH	General	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Votalite Organic Carbons	Benzene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004		
Votalite Organic Carbons	Ethylbenzene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004		
Votalite Organic Carbons	F1 (C6-C10)	General	0.1	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Votalite Organic Carbons	m & p-Xylene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004		
Votalite Organic Carbons	Methyl-tert-butylether (MTBE)	General	0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004		
Votalite Organic Carbons	o-Xylene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004		
Votalite Organic Carbons	Styrene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004		
Votalite Organic Carbons	Toluene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004		
Votalite Organic Carbons	VH C6-C10	General	0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14		
Votalite Organic Carbons	VPH (VH6 to 10 - BTEX)	General	0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14		
Votalite Organic Carbons	Xylenes (Total)	General	0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057		

Note:

"-" indicates data were not available.

“<” indicates value was less than the analytical detection limit.

“>” indicates that concentration exceeded the maximum analytical detection range.

APPENDIX B-2: EQUIPMENT, FIELD, AND TRAVEL BLANK RESULTS, 2025

Figure 1: Equipment, Field, and Travel Blank Results

Class	Analyte	Submatrix	Sample	Field Blank	Equipment Blank	Equipment Blank 2	Trip Blank	Field Blank	Equipment Blank	Trip Blank
			Date	2025-04-10	2025-04-10	2025-04-12	2025-04-10	2025-08-21	2025-08-20	2025-08-22
			Lab Sample ID	DID422	DID423	DID424	DID425	DRM813	DRM814	DRS403
			Detection Limit							
Anions and Nutrients	Alkalinity (PP as CaCO3)	General	1	<1	<1	<1	<1	<1	<1	<1
Anions and Nutrients	Alkalinity (Total as CaCO3)	General	1	<1	1.6	<1	<1	<1	<1	<1
Anions and Nutrients	Ammonia (N)	Total	0.005	<0.005	0.0054	<0.005	<0.005	<0.005	0.0093	<0.005
Anions and Nutrients	Bicarbonate (HCO3)	General	1	<1	1.9	<1	<1	<1	<1	<1
Anions and Nutrients	Bromide (Br)	Dissolved	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Anions and Nutrients	Carbonate (CO3)	General	1	<1	<1	<1	<1	<1	<1	<1
Anions and Nutrients	Chloride (Cl)	Dissolved	0.5	<0.5	<0.5	3	<0.5	-	-	-
Anions and Nutrients	Fluoride (F)	Dissolved	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anions and Nutrients	Hydroxide (OH)	General	1	<1	<1	<1	<1	<1	<1	<1
Anions and Nutrients	Nitrate (N)	Dissolved	0.003	0.012	<0.003	0.0037	<0.003	<0.003	<0.003	0.0051
Anions and Nutrients	Nitrate (NO3)	Dissolved	0.013	0.054	<0.013	0.016	<0.013	<0.013	<0.013	0.022
Anions and Nutrients	Nitrate plus Nitrite (N)	Dissolved	0.003	0.012	<0.003	0.0037	<0.003	<0.003	<0.003	0.0051
Anions and Nutrients	Nitrite (N)	Dissolved	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Anions and Nutrients	Nitrite (NO2)	Dissolved	0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033
Anions and Nutrients	Nitrogen (N)	Total	0.02	<0.02	<0.02	<0.02	<0.02	0.067	0.024	<0.02
Anions and Nutrients	Orthophosphate (P)	General	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Anions and Nutrients	Phosphorus (P)	Total	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Anions and Nutrients	Sulphate (SO4)	Dissolved	0.5	0.55	0.51	1.1	0.6	-	-	-
Carbon	Organic Carbon (C)	Dissolved	0.2-0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2
Carbon	Organic Carbon (C)	Total	0.2-0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2
General	Conductivity	General	2	<2	<2	23	<2	<2	3.1	<2
General	Hardness (CaCO3)	Total	0.5	<0.5	0.73	3.81	<0.5	<0.5	<0.5	<0.5
General	Hardness (CaCO3)	Dissolved	0.5	<0.5	<0.5	3.66	<0.5	<0.5	<0.5	<0.5

[illegible]

[illegible]

[illegible]

[illegible]

Class	Analyte	Submatrix	Sample	Field Blank	Equipment Blank	Equipment Blank 2	Trip Blank	Field Blank	Equipment Blank	Trip Blank
			Date	2025-04-10	2025-04-10	2025-04-12	2025-04-10	2025-08-21	2025-08-20	2025-08-22
			Lab Sample ID	DID422	DID423	DID424	DID425	DRM813	DRM814	DRS403
			Detection Limit							
PAH	Low Molecular Weight PAH's	General	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PAH	Naphthalene	General	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PAH	Perylene	General	0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005
PAH	Phenanthrene	General	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
PAH	Pyrene	General	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
PAH	Quinoline	General	0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
PAH	Total PAH	General	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Votalite Organic Carbons	Benzene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Votalite Organic Carbons	Ethylbenzene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Votalite Organic Carbons	F1 (C6-C10)	General	0.1	-	-	-	-	<0.1	<0.1	<0.1
Votalite Organic Carbons	m & p-Xylene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Votalite Organic Carbons	Methyl-tert-butylether (MTBE)	General	0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Votalite Organic Carbons	o-Xylene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Votalite Organic Carbons	Styrene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Votalite Organic Carbons	Toluene	General	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Votalite Organic Carbons	VH C6-C10	General	0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Votalite Organic Carbons	VPH (VH6 to 10 - BTEX)	General	0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Votalite Organic Carbons	Xylenes (Total)	General	0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057

Notes

“-“ indicates that data were not available.

“<” indicates value was less than the analytical detection limit.

APPENDIX B-3: RELATIVE PERCENT DIFFERENCES FOR FIELD DUPLICATE SAMPLES, 2025

Figure 1: Relative Percent Differences for Field Duplicate Samples, 2025

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
Physico-Chemical	Conductivity	General	2	40000	40000	0	2	19000	20000	5
Physico-Chemical	Hardness (CaCO3)	Total	0.5	4740	5730	19	0.5	2190	2200	0
Physico-Chemical	Hardness (CaCO3)	Dissolved	0.5	4590	5010	9	0.5	2140	2190	2
Physico-Chemical	pH	General	-	6.42	6.43	-	0	7.63	7.7	-
Physico-Chemical	Reactive Silica	General	0.05	1.2	1.2	0	0.05	0.69	0.66	4
Physico-Chemical	Salinity	General	2	25	25	0	2	12	12	0
Physico-Chemical	Total Dissolved Solids	General	17	-	-	-	17	12000	12000	0
Physico-Chemical	Total Suspended Solids	General	1	7.3	2.2	-	1	3.3	6.1	-
Physico-Chemical	Turbidity	General	0.1	0.13	0.14	-	0.1	5	7.9	45
Anions	Alkalinity (Total as CaCO3)	General	1	100	100	0	1	52	53	2
Anions	Bicarbonate (HCO3)	General	1	120	120	0	1	63	65	3
Anions	Carbonate (CO3)	General	1	<1	<1	-	1	<1	<1	-
Anions	Bromide (Br)	Dissolved	0.5	53	53	0	0.2	23	23	0
Anions	Chloride (Cl)	Dissolved	100	14000	14000	0	0	-	-	-
Anions	Fluoride (F)	Dissolved	0.05	0.7	0.71	1	0.05	0.38	0.38	0
Anions	Hydroxide (OH)	General	1	<1	<1	-	1	<1	<1	-
Anions	Sulphate (SO4)	Dissolved	13	2000	2000	0	0	-	-	-
Nutrients	Ammonia (N)	Total	0.02	<0.02	<0.02	-	0.005	<0.005	<0.005	-
Nutrients	Nitrate (N)	Dissolved	0.015	0.035	<0.015	-	0.015-0.075	<0.075	<0.015	-
Nutrients	Nitrate plus Nitrite (N)	Dissolved	0.015	0.035	<0.015	-	0.015-0.075	<0.075	<0.015	-
Nutrients	Nitrite (N)	Dissolved	0.001	<0.001	<0.001	-	0.001	<0.001	<0.001	-
Nutrients	Nitrogen (N)	Total	0.1	0.23	0.2	-	0.02	0.11	0.097	-

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
Nutrients	Orthophosphate (P)	General	0.001	0.031	0.031	0	0.001	0.0049	0.0044	-
Nutrients	Phosphorus (P)	Total	0.001	0.029	0.03	3	0.001	0.008	0.011	32
Carbon	Organic Carbon (C)	Dissolved	10	140	140	0	0.2	1.6	1.5	6
Carbon	Organic Carbon (C)	Total	10	130	120	8	0.2	2.2	1.9	15
Total Metals	Aluminum (Al)	Total	0.15	<0.15	<0.15	-	0.3	<0.3	<0.3	-
Total Metals	Antimony (Sb)	Total	0.025	<0.025	<0.025	-	0.05	<0.05	<0.05	-
Total Metals	Arsenic (As)	Total	0.005	<0.005	<0.005	-	0.01	<0.01	<0.01	-
Total Metals	Barium (Ba)	Total	0.05	<0.05	<0.05	-	0.1	<0.1	<0.1	-
Total Metals	Beryllium (Be)	Total	0.005	<0.005	<0.005	-	0.01	<0.01	<0.01	-
Total Metals	Bismuth (Bi)	Total	0.05	<0.05	<0.05	-	0.1	<0.1	<0.1	-
Total Metals	Boron (B)	Total	2.5	3.9	4.5	-	5	<5	<5	-
Total Metals	Cadmium (Cd)	Total	0.0005	<0.0005	<0.0005	-	0.001	<0.001	<0.001	-
Total Metals	Calcium (Ca)	Total	2.5	307	369	18	5	136	136	0
Total Metals	Chromium (Cr)	Total	0.05	<0.05	<0.05	-	0.1	<0.1	<0.1	-
Total Metals	Cobalt (Co)	Total	0.01	<0.01	<0.01	-	0.02	<0.02	<0.02	-
Total Metals	Copper (Cu)	Total	0.025	<0.025	<0.025	-	0.05	<0.05	<0.05	-
Total Metals	Iron (Fe)	Total	0.5	<0.5	<0.5	-	1	<1	<1	-
Total Metals	Lead (Pb)	Total	0.01	<0.01	<0.01	-	0.02	<0.02	<0.02	-
Total Metals	Lithium (Li)	Total	0.1	0.15	0.17	-	0.2	<0.2	<0.2	-
Total Metals	Magnesium (Mg)	Total	2.5	965	1170	19	5	450	450	0
Total Metals	Manganese (Mn)	Total	0.05	<0.05	<0.05	-	0.1	<0.1	<0.1	-
Total Metals	Mercury (Hg)	Total	0.0000019	<0.0000019	<0.0000019	-	0.0000019	<0.0000019	<0.0000019	-
Total Metals	Molybdenum (Mo)	Total	0.05	<0.05	<0.05	-	0.1	<0.1	<0.1	-

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
Total Metals	Nickel (Ni)	Total	0.05	<0.05	<0.05	-	0.1	<0.1	<0.1	-
Total Metals	Potassium (K)	Total	2.5	293	360	21	5	129	129	0
Total Metals	Selenium (Se)	Total	0.005	<0.005	<0.005	-	0.01	<0.01	<0.01	-
Total Metals	Silicon (Si)	Total	5	<5	<5	-	10	<10	<10	-
Total Metals	Silver (Ag)	Total	0.001	<0.001	<0.001	-	0.002	<0.002	<0.002	-
Total Metals	Sodium (Na)	Total	2.5	8110	9730	18	5	3630	3610	1
Total Metals	Strontium (Sr)	Total	0.05	5.63	6.93	21	0.1	2.48	2.5	1
Total Metals	Sulphur (S)	Total	150	728	896	-	300	<300	<300	-
Total Metals	Thallium (Tl)	Total	0.0005	<0.0005	<0.0005	-	0.001	<0.001	<0.001	-
Total Metals	Tin (Sn)	Total	0.25	<0.25	<0.25	-	0.5	<0.5	<0.5	-
Total Metals	Titanium (Ti)	Total	0.25	<0.25	<0.25	-	0.5	<0.5	<0.5	-
Total Metals	Uranium (U)	Total	0.005	<0.005	<0.005	-	0.01	<0.01	<0.01	-
Total Metals	Vanadium (V)	Total	0.25	<0.25	<0.25	-	0.5	<0.5	<0.5	-
Total Metals	Zinc (Zn)	Total	0.25	<0.25	<0.25	-	0.5	<0.5	<0.5	-
Total Metals	Zirconium (Zr)	Total	0.005	<0.005	<0.005	-	0.01	<0.01	<0.01	-
Dissolved Metals	Aluminum (Al)	Dissolved	0.03	<0.03	<0.03	-	0.06-0.3	<0.06	<0.3	-
Dissolved Metals	Antimony (Sb)	Dissolved	0.005	<0.005	<0.005	-	0.01-0.05	<0.01	<0.05	-
Dissolved Metals	Arsenic (As)	Dissolved	0.001	0.0011	0.0012	-	0.002-0.01	<0.002	<0.01	-
Dissolved Metals	Barium (Ba)	Dissolved	0.01	0.013	0.014	-	0.02-0.1	<0.02	<0.1	-
Dissolved Metals	Beryllium (Be)	Dissolved	0.001	<0.001	<0.001	-	0.002-0.01	<0.002	<0.01	-
Dissolved Metals	Bismuth (Bi)	Dissolved	0.01	<0.01	<0.01	-	0.02-0.1	<0.02	<0.1	-
Dissolved Metals	Boron (B)	Dissolved	0.5	3.41	3.57	5	1-5	1.7	<5	-
Dissolved Metals	Cadmium (Cd)	Dissolved	0.0001	<0.0001	<0.0001	-	0.0002-0.001	<0.0002	<0.001	-

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
Dissolved Metals	Calcium (Ca)	Dissolved	0.5	323	346	7	1-5	142	140	1
Dissolved Metals	Chromium (Cr)	Dissolved	0.01	<0.01	<0.01	-	0.02-0.1	<0.02	<0.1	-
Dissolved Metals	Cobalt (Co)	Dissolved	0.002	<0.002	<0.002	-	0.004-0.02	<0.004	<0.02	-
Dissolved Metals	Copper (Cu)	Dissolved	0.002	<0.002	<0.002	-	0.004-0.02	<0.004	<0.02	-
Dissolved Metals	Iron (Fe)	Dissolved	0.05	<0.05	<0.05	-	0.1-0.5	<0.1	<0.5	-
Dissolved Metals	Lead (Pb)	Dissolved	0.002	<0.002	<0.002	-	0.004-0.02	<0.004	<0.02	-
Dissolved Metals	Lithium (Li)	Dissolved	0.02	0.136	0.152	11	0.04-0.2	0.065	<0.2	-
Dissolved Metals	Magnesium (Mg)	Dissolved	0.5	919	1010	9	1-5	434	447	3
Dissolved Metals	Manganese (Mn)	Dissolved	0.01	<0.01	<0.01	-	0.02-0.1	<0.02	<0.1	-
Dissolved Metals	Mercury (Hg)	Dissolved	0.0000019	<0.0000019	<0.0000019	-	0.0000019	<0.0000019	<0.0000019	-
Dissolved Metals	Molybdenum (Mo)	Dissolved	0.01	<0.01	<0.01	-	0.02-0.1	<0.02	<0.1	-
Dissolved Metals	Nickel (Ni)	Dissolved	0.01	<0.01	<0.01	-	0.02-0.1	<0.02	<0.1	-
Dissolved Metals	Potassium (K)	Dissolved	0.5	304	332	9	1-5	134	132	2
Dissolved Metals	Selenium (Se)	Dissolved	0.001	<0.001	<0.001	-	0.002-0.01	<0.002	<0.01	-
Dissolved Metals	Silicon (Si)	Dissolved	1	<1	<1	-	2-10	<2	<10	-
Dissolved Metals	Silver (Ag)	Dissolved	0.0002	<0.0002	<0.0002	-	0.0004-0.002	<0.0004	<0.002	-
Dissolved Metals	Sodium (Na)	Dissolved	2.5	7890	8220	4	1-5	3670	3750	2
Dissolved Metals	Strontium (Sr)	Dissolved	0.01	5.89	6.46	9	0.02-0.1	2.62	2.5	5
Dissolved Metals	Sulphur (S)	Dissolved	30	699	775	10	60-300	323	324	-
Dissolved Metals	Thallium (Tl)	Dissolved	0.0001	<0.0001	<0.0001	-	0.0002-0.001	<0.0002	<0.001	-
Dissolved Metals	Tin (Sn)	Dissolved	0.05	<0.05	<0.05	-	0.1-0.5	<0.1	<0.5	-
Dissolved Metals	Titanium (Ti)	Dissolved	0.05	<0.05	<0.05	-	0.1-0.5	<0.1	<0.5	-
Dissolved Metals	Uranium (U)	Dissolved	0.001	0.0023	0.0026	-	0.002-0.01	<0.002	<0.01	-

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
Dissolved Metals	Vanadium (V)	Dissolved	0.05	<0.05	<0.05	-	0.1-0.5	<0.1	<0.5	-
Dissolved Metals	Zinc (Zn)	Dissolved	0.05	<0.05	<0.05	-	0.1-0.5	<0.1	<0.5	-
Dissolved Metals	Zirconium (Zr)	Dissolved	0.001	<0.001	<0.001	-	0.002-0.01	<0.002	<0.01	-
Hydrocarbons	EPH (C10-C19)	General	0.2	<0.2	<0.2	-	0.2	<0.2	<0.2	-
Hydrocarbons	EPH (C19-C32)	General	0.2	<0.2	<0.2	-	0.2	<0.2	<0.2	-
Hydrocarbons	F2 (C10-C16 Hydrocarbons)	General	0.1	<0.1	<0.1	-	0.1	<0.1	<0.1	-
Hydrocarbons	F3 (C16-C34 Hydrocarbons)	General	0.1	<0.1	<0.1	-	0.1	<0.1	<0.1	-
Hydrocarbons	F4 (C34-C50 Hydrocarbons)	General	0.2	<0.2	<0.2	-	0.2	<0.2	<0.2	-
Hydrocarbons	HEPH (C19-C32 less PAH)	General	0.2	<0.2	<0.2	-	0.2	<0.2	<0.2	-
Hydrocarbons	LEPH (C10-C19 less PAH)	General	0.2	<0.2	<0.2	-	0.2	<0.2	<0.2	-
Hydrocarbons	Total Extractables C10 to C30	General	0.2	<0.2	<0.2	-	0.2	<0.2	<0.2	-
PAH	1-Methylnaphthalene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	2-Methylnaphthalene	General	0.0001	<0.0001	<0.0001	-	0.0001	<0.0001	<0.0001	-
PAH	Acenaphthene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Acenaphthylene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Acridine	General	0.00004	<0.00004	<0.00004	-	0.00004	<0.00004	<0.00004	-
PAH	Anthracene	General	0.00001	<0.00001	<0.00001	-	0.00001	<0.00001	<0.00001	-
PAH	Benzo(a)anthracene	General	0.00001	<0.00001	<0.00001	-	0.00001	<0.00001	<0.00001	-
PAH	Benzo(a)pyrene	General	0.000005	<0.000005	<0.000005	-	0.000005	<0.000005	<0.000005	-
PAH	Benzo(b&j)fluoranthene	General	0.00003	<0.00003	<0.00003	-	0.00003	<0.00003	<0.00003	-
PAH	Benzo(e)pyrene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Benzo(g,h,i)perylene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Benzo(k)fluoranthene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
PAH	Chrysene	General	0.00002	<0.00002	<0.00002	-	0.00002	<0.00002	<0.00002	-
PAH	Dibenz(a,h)anthracene	General	0.000005	<0.000005	<0.000005	-	0.000005	<0.000005	<0.000005	-
PAH	Fluoranthene	General	0.00001	<0.00001	<0.00001	-	0.00001	<0.00001	<0.00001	-
PAH	Fluorene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	High Molecular Weight PAH's	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Indeno(1,2,3-cd)pyrene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Low Molecular Weight PAH's	General	0.0001	<0.0001	<0.0001	-	0.0001	<0.0001	<0.0001	-
PAH	Naphthalene	General	0.0001	<0.0001	<0.0001	-	0.0001	<0.0001	<0.0001	-
PAH	Perylene	General	-	-	-	-	0.00005	<0.00005	<0.00005	-
PAH	Phenanthrene	General	0.00005	<0.00005	<0.00005	-	0.00005	<0.00005	<0.00005	-
PAH	Pyrene	General	0.00002	<0.00002	<0.00002	-	0.00002	<0.00002	<0.00002	-
PAH	Quinoline	General	0.000025	<0.000025	<0.000025	-	0.000025	<0.000025	<0.000025	-
PAH	Total PAH	General	0.0001	<0.0001	<0.0001	-	0.0001	<0.0001	<0.0001	-
Votalite Organic Carbons	Benzene	General	0.0004	<0.0004	<0.0004	-	0.0004	<0.0004	<0.0004	-
Votalite Organic Carbons	Ethylbenzene	General	0.0004	<0.0004	<0.0004	-	0.0004	<0.0004	<0.0004	-
Votalite Organic Carbons	F1 (C6-C10)	General	-	-	-	-	0.1	<0.1	<0.1	-
Votalite Organic Carbons	m & p-Xylene	General	0.0004	<0.0004	<0.0004	-	0.0004	<0.0004	<0.0004	-
Votalite Organic Carbons	Methyl-tert-butylether (MTBE)	General	0.004	<0.004	<0.004	-	0.004	<0.004	<0.004	-
Votalite Organic Carbons	o-Xylene	General	0.0004	<0.0004	<0.0004	-	0.0004	<0.0004	<0.0004	-
Votalite Organic Carbons	Styrene	General	0.0004	<0.0004	<0.0004	-	0.0004	<0.0004	<0.0004	-
Votalite Organic Carbons	Toluene	General	0.0004	<0.0004	<0.0004	-	0.0004	<0.0004	<0.0004	-
Votalite Organic Carbons	VH C6-C10	General	0.14	<0.14	<0.14	-	0.14	<0.14	<0.14	-
Votalite Organic Carbons	VPH (VH6 to 10 - BTEX)	General	0.14	<0.14	<0.14	-	0.14	<0.14	<0.14	-

Class	Analyte	Submatrix	BRP-48 Surface				BRP-46 Surface			
			2025-04-10				2025-08-21			
			Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)	Detection Limit	Primary Result	Duplicate Result	Relative Percent Difference (%)
Votalite Organic Carbons	Xylenes (Total)	General	0.00057	<0.00057	<0.00057	-	0.00057	<0.00057	<0.00057	-

Note

“-” indicates that data were not available or RPD was not calculated because the sample value was within 5-times the analytical detection limit.

“-” indicates that data were not available or RPD was not calculated because the sample value was within 5-times the analytical detection limit.

APPENDIX C: PHYTOPLANKTON BIOMASS RESULTS

Figure 1: Phytoplankton Biomass Results, 2025

Parameter	Detection Limit Range	Station	BRP-46	BRP-48	BRP-51	REF-04	REF-05	DUP1	BRP-46	BRP-46	BRP-46	BRP-51	BRP-51	BRP-51	REF-04	REF-04	REF-04	REF-05	REF-05	REF-05	BRP-48	BRP-48	BRP-48
		Replicate	1	1	1	1	1	1	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
		Date	2025-04-10	2025-04-10	2025-04-11	2025-04-11	2025-04-11	2025-04-10	2025-08-21	2025-08-21	2025-08-21	2025-08-21	2025-08-21	2025-08-21	2025-08-20	2025-08-20	2025-08-20	2025-08-20	2025-08-20	2025-08-20	2025-08-22	2025-08-22	2025-08-22
		Lab Sample ID	DID413	DID415	DID417	DID418	DID420	DID421	DRR781	DRR782	DRR783	DRR784	DRR785	DRR786	DRR787	DRR788	DRR789	DRR790	DRR791	DRR792	DSE054	DSE069	DSE073
		Unit																					
Chlorophyll a	0.53-0.6	µg /L	<0.59	<0.58	<0.58	<0.58	<0.59	<0.58	<0.58	0.67	0.69	<0.59	0.63	<0.59	1.1	0.95	0.98	1.1	0.96	1.2	0.86	0.8	0.75
Chlorophyll c	0.53-0.6	µg /L	0.68	<0.58	1.4	<0.58	<0.59	<0.58	<0.58	<0.59	<0.58	<0.59	<0.59	<0.59	<0.53	<0.53	<0.53	<0.53	<0.56	<0.53	<0.59	<0.59	<0.6
Pheophytin A	0.53-0.6	µg /L	<0.59	0.92	<0.58	<0.58	<0.59	1.1	<0.58	<0.59	<0.58	<0.59	<0.59	<0.59	<0.53	<0.53	<0.53	<0.53	<0.56	<0.53	<0.59	<0.59	<0.6

Note: "<" indicates that concentration was less than the analytical detection limit.