Transmittal Letter

From: Trevor Sims, MBA P.Eng. Environment, Climate and Parks

Date: 2022-10-28

Subject: 2021 Water Quality Monitoring Program Summary

Project: Sherridon Mine Rehabilitation - Tailing Neutralization and Relocation and Associated Works

Comments:

Please find attached the above-mentioned report. If you have any questions please contact me.

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CC:

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Doug Ramsey, DRCL

Ed Collins, KGS

technical report

Sherridon Orphaned Mine Reclamation Project
2021 Water Quality Monitoring Program Summary

DJRC | D.J. Ramsey Consulting Ltd.

30 September 2022

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|2021 Water Quality Monitoring Program Summary

September 2022

|Prepared for:

Tetra Tech Canada Inc.
Suite 400 – 161 Portage Avenue East
Winnipeg, MB R3B 0Y4

|Prepared by:

D.J. Ramsey, M.Sc. R.P.Bio.

Date: 30 September 2022

Cover Photo Credit: Sherridon Project Site, access road alignment following mine wase removal, 9 September 2021 (Photo by Matt Randall, Tetra Tech Canada Inc.)

DJRC | D.J. Ramsey Consulting Ltd.

309 – 673 Market Hill
Vancouver, BC V5Z 4B5
604.340.1800
dramsey@djrc.ca

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Executive Summary

Planning of the Sherridon Orphaned Mine Reclamation Project was initiated in 2006, leading to implementation (construction) of the plan beginning in 2009 and continuing to the present. The reclamation approach employed in the project is sub-aqueous disposal of the sulphide mine waste in the adjacent Camp Lake, which is a demonstrated best management practice for the long-term control of acid rock drainage (ARD) from sulphide-bearing mine waste materials. Sherlett Creek, the natural inflow to Camp Lake, was diverted around Camp Lake to enable placement of the mine waste. The bulk of the construction work was completed prior to 2018, and Sherlett Creek flow through Camp Lake was restored in August 2018. Subsequent construction work in fall 2018, summer 2020, and summer 2021 involved removal of pockets of mine waste from the shoreline and island adjacent to the east basin of Camp Lake and removal of the access road adjacent to the south basin of Camp Lake. The final year of project construction was 2021, with planned construction works completed in mid-September. Prior to 2019, lime treatment was used to manage water quality and, water levels in Camp Lake. Restoration of the creek flow through Camp Lake has since eliminated any need for lime treatment. This report describes and summarises the results of the 2021 water quality monitoring program for the project. Results are compared to applicable Manitoba water quality criteria, and effects of water discharges from Camp Lake to the Cold Lake arm of Kississing Lake are examined.

Manitoba manages water quality using the Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOG). These consist of Tier I Standards, Tier II Objectives, and Tier III Guidelines. Tier I Standards typically are applied to discharges and must be met – no Tier I standards are applicable to the Sherridon project. Tier II Objectives have been defined for a limited number of common pollutants and typically are applied to receiving waters rather than to discharges; representing the concentrations to be achieved after allowance for mixing. Tier II objectives are established for long-term (chronic) exposures and for short-term (acute) exposures. The acute exposure objectives typically are higher than the chronic exposure objectives. Tier II Objectives are targets that should be met most of the time, except during extraordinary climate conditions (e.g., severe drought) or when background concentrations exceed the objective. Tier III Guidelines cover a wide range of water quality parameters that are not otherwise included in the Tier II Objectives. The Tier III numerical guidelines provide a basis for evaluation of water quality, and a means to evaluate any need for site-specific criteria, but do not require strict compliance.

The project area has experienced a wide range of precipitation and runoff conditions over the past three years – the April through September period of 2020 was the wettest of the past decade, while the same period in 2021 was the driest of the past decade. The resulting extreme low flows on Sherlett Creek enabled examination of how water quality in Camp Lake responds to the low to negligible inflows that occurred in late summer and autumn of 2021. The low Sherlett Creek flows during this period also enabled further examination of water quality in the

creek reach between Sherlett lake and Camp Lake and investigation into the possible causes of the elevated metal concentrations that develop in this reach at low open water season flows.

The occurrence of unusually elevated cadmium, copper, and zinc concentrations in the reach of Sherlett Creek between Sherlett Lake and Camp Lake during low flow conditions was last observed in 2017 (DJRC 2018) and elevated concentrations of all three parameters once again developed in early September 2021. Extensive sampling in late July, August, September, and October of 2021 determined the primary source of metal contamination to Sherlett Creek appears to be a sub-surface source that enters the creek downstream of station SC-4. This could be an inflow of metal-contaminated groundwater or direct contact of the creek flow with the mineralized zone, which passes under the creek in this location.

Sampling of water quality at intervals across the stream channel determined that the highest parameter concentrations at both SC-3 and SC-2 occurred adjacent to the north creek bank, which suggests the contamination is entering from the north side of the creek. Prior to this finding, the primary focus of investigation was the former East Mine workings, located south of the creek. Although this finding does not rule out the mine workings, it indicates a more widespread survey of potential sources needs to be completed before remedial options can be examined.

The elevated cadmium, copper, and zinc concentrations in Sherlett Creek are not a concern for recreational water users, concentrations are well within the Guidelines for Canadian Recreational Water Quality and the Guidelines for Canadian Drinking Water Quality.

The prevalent cadmium, copper, and zinc concentrations, consistently exceeding the Tier II objectives in Sherlett Creek during the open water season are a direct concern for resident aquatic life in the creek. Fish are seasonal users of the creek, moving into the creek from Cold Lake in the spring freshet and then returning to the lake as freshet passes and before any very low flow conditions develop later in the summer. This is a typical pattern of local stream use by fish in northern Manitoba that likely has developed in part because of the uncertainty of flows being maintained throughout the open water season. Seasonal use of Sherlett Creek by fish also minimizes their exposure to metal concentrations in the creek and prevents their exposure to the even higher metal concentrations that can develop at low flows, as seen in 2021. The extent to which the seasonal and resident aquatic life in Sherlett Creek below Sherlett Lake may be affected by the metal concentrations in this reach has not been investigated.

The 2021 open water season was the first in which the Sherlett Creek inflow had a predominant effect on the concentrations of metals (aluminum, cadmium, copper, and zinc) in Camp Lake and this influence was related to both flow (water quantity) and water quality. Aside from spring runoff, there were no heavy rainfall/runoff events over the open water season.

In general, the highest metal concentrations of the open water season occurred at the beginning of June, shortly following ice-out. Creek flows also were the highest at the beginning of June and, based on the decrease in Camp Lake level, flows decreased continually from the beginning

of June through to early October (Figure 5) – by early July flow was lower than at any time in the 2020 open water season, and by early August flow was lower than at any time in the 2019 open water season.

Metal concentrations in Camp Lake decreased continually from the beginning of June through to early August. These decreases appear related primarily to the flushing effect of the Sherlett Creek flow, indicating that flushing greatly exceeded contributions of metals from any sources either within the lake or in the local watershed during this period. The declines stopped around early to mid-August either due to insufficient Sherlett Creek flow to overcome the minor residual local sources of metals to the lake (Al, Cd, and Zn) or, in the case of copper, to a combination of insufficient flow and higher metal concentrations in the inflowing creek. The role of insufficient flow is strongly implicated by the common timing of the ends in the initial declines for all four metals. Creek flows continued declining though August and were negligible from the end of August 2021 past 18 March 2022.

The elevated cadmium and zinc concentrations that developed in Sherlett Creek in September and October are not implicated in the stalled declines in Camp Lake – by the time these increases occurred, inflows from Sherlett Creek were too low to have a material effect on concentrations in the lake. However, by mid-July, total copper concentrations in Sherlett Creek were as high as, or occasionally higher than in the South, Central, and North basins of Camp Lake and appear to have contributed to the end of the early season decline of copper concentrations and clearly contributed to higher seasonal minimum concentrations than would otherwise have occurred in these basins of Camp Lake.

Concentrations of both total cadmium and total zinc, at the open water seasonal minima in early August 2021, were lower in all basins of Camp Lake than have occurred since Sherlett Creek flow was returned to Camp Lake in 2018. Although construction was not quite complete in August, the monitoring results provide a clear indication of continued improvement in Camp Lake water quality. The abrupt halt of the declines of all four metals implies that greater improvements may have occurred had even modest flows continued through the open water season. This hypothesis can be tested in 2022 provided higher streamflows occur.

Concentrations of all metals slowly increased in all lake basins from the summer minimum through to the end of the open water season, reflecting the continuing small diffuse sources within the local watershed that weren't balanced by the negligible flows. Construction activity adjacent to the East basin also appeared to contribute to higher metal concentrations than in other parts of the lake beginning in mid-August. Since 2018, construction activity has largely been focussed on the East basin. With construction now complete, water quality in the East basin should become more similar to that in the other lake basins.

Cold Lake water quality continues to reflect the effects of the historical discharge of mine-influenced water from as early as 1927 up to 2009, when reclamation project construction was initiated, and the discharge was discontinued. All of total iron, aluminum, cadmium, copper, and zinc occur at elevated background concentrations in Cold Lake, in some cases at

concentrations exceeding the applicable MWQSOG Tier II objectives, and this is most evident at stations CL2, CL4, and CL5 in the central portion of the Cold Lake arm.

The Camp Lake discharge generally had minor effects on water quality in Cold Lake outside the mixing zone. pH, alkalinity, turbidity, and TSS concentrations were not affected at all. Total aluminum and total cadmium concentrations remained within the respective background concentrations throughout the year. Total zinc concentrations were slightly elevated above background at CL2 and CL4 on June 8 but were within the background range on all other dates. Total copper concentrations also were slightly elevated in June, although for a slightly longer period, with elevated concentrations above background at CL2, CL4, and CL5 on both June 8 and 28. Total copper concentrations were at or below background at all stations over the remainder of the year.

Near-surface total iron concentrations in Cold Lake outside the mixing zone were elevated above background at the beginning of June at all of CL2, CL4, CL5, and CL6, with concentrations decreasing from 1.5 mg/L at CL2 to 0.87 mg/L at CL6. By the end of June, concentrations at CL6 were within background and concentrations at CL4 and CL5 were near background at 0.64 mg/L. CL2 remained above background at 0.92 mg/L. From July to the end of August, total iron concentrations at all four stations were near (CL2) or within (CL4, CL5, CL6) background. Concentrations increased again in September, exceeding background at CL2 (0.95 mg/L), CL4 (0.78 mg/L), and CL5 (0.72 mg/L) at the end of September and continuing into October at CL4 and CL5. Stations CL2 and CL6 weren't sampled in October.

The early June elevation of iron appears related to the Camp Lake discharge, while the increase in September does not appear to be related to the discharge – there was low discharge in August and negligible to no discharge thereafter in 2021. A more likely cause of the September increase is autumnal mixing. Summer thermal stratification in Cold Lake developed before the first open water sampling date on June 8 and broke down and began breaking down with fall cooling in later August and the water column was fully mixing between by the end of September, enabling water column mixing to the bottom of the lake and entrainment of iron released from the lake sediments under the anoxic conditions that developed at depth near bottom during summer. Near-bottom iron concentrations were within background throughout the open water season, but also typically exceeded near-surface concentrations through the stratified period.

There has been a material change in the partitioning of some metals between the particulate and dissolved phases in each of 2020 and 2021. Zinc and cadmium typically occur predominantly in the dissolved phase, and that partitioning hasn't changed. However, iron, aluminum, and copper have all shifted toward occurring predominantly in the dissolved phase. The shift was greatest for iron, with the dissolved fraction increasing from 23% to 66-83% of the total. The proportion of aluminum as dissolved increased from 33% to 57%, and the proportion of copper as dissolved increased from 50% to 77-82%. Dissolved/particulate partitioning affects how the metals behave, particularly following discharge to Cold Lake. Particulates settle quickly whereas dissolved metals are primarily attenuated by dilution. All of aluminum, copper, and

iron should occur primarily in the particulate phase, based on the circumneutral water chemistry. Dissolved organic matter can adsorb these metals and keep a greater proportion in the dissolved phase than would be predicted by water quality – analyses of dissolved organic carbon (DOC) in 2021 demonstrated abundant dissolved organic matter is present in Camp Lake, although it is not known if DOC concentrations increased between 2019 and 2020/2021.

The reclamation project has substantially reduced metal loading to Cold Lake, by 75% (Cd) to 93% (Al) since 2008, just before project construction was initiated. Similar reductions of water column metal concentrations have occurred for all parameters with the exception of total Fe, which has decreased by only 38-49% compared to a 79% decrease in the discharge. The likely explanation for this discrepancy is iron release from the lake sediments given the large pool of iron in Cold Lake sediments – accounting for 25-28% of the sediment mass at stations CL2, CL3, and CL4 – iron is released from lake sediments under oxygen depleted conditions, as typically develop in the lake hypolimnion during summer thermal stratification.

As a result of the substantially reduced key metal concentrations in the Camp Lake discharge, the mean concentrations of total aluminum, cadmium, and zinc in 2021 were generally below the applicable MWQSOG Tier II chronic exposure objectives (cadmium and zinc) or Tier III guideline (aluminum). This is a substantial improvement compared to 2008, when total aluminum concentrations exceeded the Tier III guideline across Cold Lake and both total cadmium and total zinc exceeded the applicable Tier II acute exposure objectives across the lake.

The proportionate decreases in total copper concentrations were about the same as for aluminum, cadmium, and zinc, but mean total copper concentrations in Cold Lake remained above the Tier II chronic exposure objective at all stations, and above the Tier II acute exposure objective at CL2, CL3, and CL4. This is an improvement compared to 2008, when the acute objective was exceeded across Cold Lake, but not as large an improvement as seen in aluminum, cadmium, or zinc. The reason for this difference is not clear. Copper loading was not proportionately greater than for the other three metals, and the resulting concentrations in the Cold Lake sediments also weren't proportionately greater.

Further reductions in the water column concentrations of Al, Cd, Cu, and Zn in Cold Lake should be expected to occur as concentrations in Camp Lake continue to decrease. Further reductions in water column iron concentrations in water column Fe concentrations may not accompany reductions in loading from Camp Lake due to continuing release from the Cold Lake sediments.

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1.0 Introduction

Planning of the Sherridon Orphaned Mine Reclamation Project was initiated in 2006, leading to implementation (construction) of the plan beginning in 2009 and continuing to the present. This report describes and summarises the results of the 2021 water quality monitoring program for the project. Results are compared to applicable Manitoba water quality criteria, and effects of water discharges from Camp Lake to the Cold Lake arm of Kississing Lake are examined.

1.1 Camp Lake Water and Water Quality Management – 2021

The entire flow of Sherlett Creek was directed into Camp Lake on August 12, 2018, and a discharge from Camp Lake via the North weir to the Cold Lake arm of Kississing Lake was initiated on August 21, 2018. The full flow of Sherlett Creek to Camp Lake was maintained until October 19, 2018, when the creek flow was split, with (nominally) 85% of the flow continuing into and through Camp Lake and with 15% (nominally) of the flow directed to Portage Lake and lower Sherlett Creek via the diversion channel. The split flow configuration continues to date and will be maintained year-round going forward. The split flow has eliminated any requirement for lake treatment to date and is expected to eliminate any future need for batch lime treatment.

Until August 2018, an interim water and water quality management plan was used to establish and maintain the operating level of Camp Lake. This involved operating Camp Lake as a periodic batch discharge system. The lake would accumulate water due to direct precipitation and runoff from the local watershed in the absence of a discharge. Water quality in the lake degraded over the course of the open water season due primarily to remaining adjacent sources of acid rock drainage (ARD) in the local watershed. Water quality was managed using periodic (typically annual) batch treatment of Camp Lake with lime to neutralize and precipitate metals from the ARD-affected lake water, followed by the discharge of treated water over the North weir to the Cold Lake arm of Kississing Lake.

The restoration of Sherlett Creek flow to Camp Lake in August 2018 was made possible by the progress of the Sherridon Reclamation Project. Removal of ARD source materials from the local watershed, although not complete, had progressed to the point that the alkalinity delivered by Sherlett Creek was sufficient to neutralize the remaining sources of ARD in runoff to the lake, as has since been demonstrated (DJRC 2019, 2020, and 2021).

1.2 Status of Sherridon Reclamation Works – 2021

Reclamation work to remove remnant mine waste adjacent to Camp Lake was completed in mid-September 2021. Reclamation work completed in 2018 and most recently in 2020 was focussed on remnant mine waste on the north shore of the East basin of Camp Lake and on the peninsula that separates the East basin from the main North-South axis of Camp Lake (Figure 1). This remnant mine waste was initially identified in 2018, following an overflow from Fox

Lake that uncovered waste from beneath peat soils the waste had flowed under when initially placed during mine operations. Subsequent surveys around the East basin and peninsula identified additional waste deposits requiring removal (Figure 1). Work in 2018 and 2020 focused on that removal, with approximately 15,000 m^3 removed in 2018 and approximately 35,000 m^3 removed in 2020.

Known sources of ARD remaining adjacent to Camp Lake going into the 2021 construction season, include (Figure 1):

- Mine waste used to construct the access road (runoff to Central and South basins);
- Remnant mine waste along the north and south shores of the East basin of Camp Lake (runoff primarily to the East basin with minor runoff to the Central basin);
- Total estimated mine waste quantity remaining to be removed in 2021- approximately 4000 m^3.

1.2.1 Reclamation Works Chronology

The complete reclamation work chronology is detailed below.

2009-2012 - The bulk of the 7 million tonnes of acid generating mine waste in the Sherridon tailings pile was relocated to the adjacent Camp Lake over the period 2009 to 2012. The lake was re-filled with water from Kississing Lake in 2013. However, remaining mine waste on the former Sherridon mill site (principally waste rock) and in the site-access causeway and the site access road, along with potential exchange of water with the Glory Hole (a direct opening to the underground mine workings), and the temporary Tailings Berm placed at the south end of Camp Lake at the start of the reclamation project, continued to contribute to water quality degradation in Camp Lake. Water treatment plant (WTP) sludge that had been deposited in the North basin earlier in the reclamation project was a further contributor to water quality degradation.

2016 - The summer 2016 construction program removed the WTP sludge from the North basin to Trap Lake, and the mill site and causeway waste materials were placed in Camp Lake, removing these ARD and metals sources from further degrading water quality Camp Lake going forward.

2017 - No reclamation work was done in 2017.

2018 - Work completed in 2018 included:

- Removal of mine waste adjacent to the access road in a former ore load-out area;
- Construction of the dam to isolate the Glory Hole adjacent to the South basin, where there was the potential for exchange of ARD influenced groundwater with the South basin;
- Earthworks reinforcement and overflow spillway construction at the outlet of Fox Lake, which periodically flows south into the East basin of Camp Lake, in order to maintain

the water level of Fox Lake and prevent uncontrolled breaching of the temporary clay dyke that had been placed at the lake outlet in 2012;

- Identification and removal of mine waste on the discharge pathway between Fox and Camp Lake;
- Identification and partial removal of remnant mine waste along the north shore of the East basin of Camp Lake;
- Removal of the tailings berm (constructed of mine waste) across the inlet to Camp Lake from Sherlett Creek;
- Notching of the coffer dam at the inlet of Camp Lake to restore flows of Sherlett Creek into and through the lake beginning August 12; and,
- Installation of flow limitation plates on the inlets of the diversion channel culverts to split Sherlett Creek flow between Camp Lake (nominally 85% of flow) and Portage Lake/lower Sherlett Creek (nominally 15% of flow).

2019 – No reclamation work was done in 2019.

2020 – Work in 2020 focussed on removal of remnant mine waste along the north shore of the East basin of Camp Lake and around the peninsula separating the East basin from the North basin of Camp Lake (runoff to the East basin primarily, but also to the North and Central basins).

2021- Work in 2021 focussed on completing removal of remnant mine waste adjacent to the East basin and removal of the access road (Figure 1). All planned construction work was completed in mid-September 2021.

Figure 1. Mine waste removal work areas in 2018 and 2020 (black outline, gray shading) and 2021 (orange shading).

2.0 Water Quality Monitoring Program – 2020

2.1 Water Quality

The water quality monitoring program involved periodic sampling of the following locations, with the frequency and parameters listed in Table 1:

- Sherlett Creek, upstream of Camp Lake (SC-1) (Figure 2);
- 8 stations on Camp Lake (NB-1, NB-2, CB-1, CB-2, SB-1, SB-2, EB-1, and EB-2; Figures 2 and 3);
- Camp Lake discharge, at the North Weir (Figures 2 and 4);
- 3 stations in the discharge mixing zone of Cold Lake (CL3, CL7, and CL8; Figures 2 and 4); and,
- 4 other stations on Cold Lake (CL2, CL4, CL5, and CL6; Figures 2 and 5).

The Camp Lake discharge at the North weir also was sampled for testing of acute toxicity (96-hour LC-50) to Rainbow Trout on 5 dates (June 16, July 12, August 16, September 6, and October 4).

All samples from Camp Lake, the Camp Lake discharge, and Sherlett Creek for laboratory analysis were collected as dip samples from approximately 0.25 m depth. The mixing zone and Cold Lake station samples included a near-surface dip sample collected from approximately 0.25 m and a near-bottom sample, collected from approximately 0.5 m above the lake bottom using a Wildco trace-metal grade beta bottle. Field measurements included Secchi disk visibility at each station on Camp Lake and Cold Lake; a surface pH measurement using a handheld pH meter at all locations, and measurements of water temperature, specific conductance, pH, dissolved oxygen, and turbidity using a YSI multi-parameter sonde. Sherlett Creek and the Camp Lake discharge were measured near-surface only. Camp Lake profiles included measurements at 0.25 m, and at 1.0 m intervals to 0.5 m above the lake bottom. Cold Lake profiles included measurements at 0.25 m, and at 1 m intervals to 0.5 m above the lake bottom.

Sherlett Creek essentially represents background water quality for the watershed and is the water source that will be the dominant influence on Camp Lake water quality following completion of project construction. Station SC-1 is located at the bridge crossing immediately upstream of the project area and is not influenced by any of the project activities.

The discharge mixing zone is the portion of the Cold Lake arm of Kississing Lake within a 100 m radius of the point where the Camp Lake discharge enters the lake, as required by the Manitoba Water Quality Standards Objectives and Guidelines (MWQSOGs, Manitoba Water Stewardship 2011). Stations CL7 and CL8 are located on the margin of the mixing zone, 100 m from the discharge (Figure 4). Station CL3 is located within the mixing zone, 75 m from the discharge.

Lab analyses for the Camp Lake discharge and for mixing zone samples were completed on a rush basis. All laboratory analyses were conducted by Bureau Veritas (formerly Maxxam) Laboratories, a CALA-accredited independent laboratory.

Table 1. Sherridon Reclamation Project: Water quality monitoring parameters and frequency, 2021.

Location	Frequency	Parameters
Camp Lake Discharge at North Weir	2021: February 18; approximately weekly from June 1 to Oct 15	Lab: pH, alkalinity, TSS[a], turbidity, total and dissolved metals, sulphate, DOC, TOC Field: pH, temperature, dissolved oxygen, specific conductance, turbidity
Camp Lake (NB-1, NB-2, CB-1, CB-2, SB-1, SB-2, EB-1, and EB-2)	2021: February 18; approximately weekly from June 1 to Oct 21	Lab: pH, alkalinity, TSS, turbidity, sulphate, DOC, TOC, total and dissolved metals from approximately 0.25 m below surface Field: pH, temperature, dissolved oxygen, specific conductance, and turbidity profiles with depth; Secchi disc visibility
Sherlett Creek (SC-1)	2021: February 18; approximately weekly from June 1 to Oct 21	Lab: pH, alkalinity, TSS, turbidity, sulphate, DOC, TOC, total and dissolved metals from approximately 0.25 m below surface Field: pH, temperature, dissolved oxygen, specific conductance, turbidity
Discharge Mixing Zone (CL3, CL7, and CL8)	2021: February 18; approximately weekly from June 1 to Oct 21	Lab: pH, alkalinity, TSS, turbidity, total and dissolved metals from 0.0.25 m below surface and 0.5 m above lake bottom Field: pH, temperature, dissolved oxygen, specific conductance, and turbidity profiles with depth; Secchi disc visibility
Cold Lake (CL2, CL4, CL5, and CL6)	2021: February 18; Monthly (twice in June) from June 8 to Oct 21	Lab: pH, alkalinity, TSS, turbidity, total and dissolved metals from 0.0.25 m below surface and 0.5 m above lake bottom Field: pH, temperature, dissolved oxygen, specific conductance, and turbidity profiles with depth; Secchi disc visibility

a. TSS reportable detection limit (RDL) lowered to 1 mg/L starting in May 2019 and continuing to present. Previous RDL was 4 mg/L

2.2 QA/QC

The field quality assurance/quality control (QA/QC) program for water quality monitoring was based on the field QA/QC requirements of the Metal and Diamond Mining Effluent Regulations (MDMER, Minister of Justice 2021). A field duplicate sample was collected on each sampling day. An equipment blank was taken from the water sampler on each day of use to check for equipment contamination before use. A trip blank was sent with each sample shipment to check for contamination of samples during shipment. Field water quality meters were standardised (i.e., checked against standards) each day and calibrated as needed based on the standardisation results.

Field duplicate sample, equipment blank, and trip blank values are included in the laboratory data tabulated in Appendix B1.

2.2.1 Aluminum Analytical Issues

Analytical issues were identified regarding some of the total aluminum results reported for three COC's: C154362, C155836, and C171071 (Table 2). The issue was characterized by much higher values than recently reported, and values 2 to 3 times higher than the historical range for the specific location. BV Labs investigated the issues and found almost all the originally reported values in question were anomalously high. Contamination during sample digestion was identified as the cause of the anomalous values, procedural changes were implemented to control contamination, and samples were reanalysed where possible.

Table 2. Samples identified as having anomalously high reported total aluminum values and summary of laboratory confirmation of the anomaly and reanalysis.

COC	Station	Sample Date	Anomaly Confirmed (Y/N)	Reanalysis Completed and Accepted
C154362	CL3 (btm)	26 July 2021	Y	Y
	CL7 (sfc)		Y	Y
	CL8 (sfc)		Y	Y
	CB-1		Y	Y
	NB-1		Y	Y
C155836	CL3 (btm)	1 August 2021	Y	Y
	SB-2		Y	Y
C171071	SC-2	21 September 2021	N	N
	SC-3		N	N
	SC-4		N	N
	SC-5		Y	Y
	SC-6		N	N

2.3 Data Screening

Water quality monitoring data were screened against two sets of criteria:

- MDMER – Metal and Diamond Mining Effluent Regulations (Minister of Justice 2022; Table 3); and,
- MWQSOG – the Manitoba Water Quality Standards, Objectives, and Guidelines for the protection of aquatic life (Manitoba Water Stewardship 2011; Table 4).

The MDMER set out the minimum national standards that must be met by operating metal and diamond mines in Canada. The MDMER supersede the MMER (Metal Mining Effluent Regulations) and the applicable effluent quality limits were revised in 2018 with compliance with the new limits required by June 2021. Although they are not applicable to the Sherridon Project, the MDMER are considered in data screening to compare how the project is performing in comparison to this standard.

Table 3. Metal and Diamond Mining Effluent Regulations (MDMER) discharge quality limits (Minister of Justice 2022). Units are mg/L except as noted.

Parameter	Grab Sample	Monthly Mean
TSS	30.00	15.00
pH (pH units)	6.0 to 9.5	6.0 to 9.5
Arsenic, total	0.20	0.10
Copper, total	0.20	0.10
Lead, total	0.16	0.08
Nickel, total	0.50	0.25
Zinc, total	0.80	0.40
Ammonia, unionized	1.00 mg/L (as N)	0.50 mg/ L (as N)
Radium 226	1.11 Bq/L	0.37 Bq/L
Rainbow Trout 96 hr LC_{50}	Non-toxic	Non-toxic
Daphnia magna	Non-toxic	Non-toxic

The MWQSOG are the water quality criteria used by Manitoba Environment, Climate, and Parks to manage surface water quality. The MWQSOGs include criteria for protection of aquatic life, drinking water, use by livestock, agricultural irrigation, and primary recreation (i.e., swimming). The aquatic life criteria have been selected because they are the most stringent (i.e., are the lowest) and protect the most sensitive users of the receiving waters. The MWQSOG consist of three tiers:

- Tier I Standards, which must be met if applicable. These are compliance requirements set out in law/regulation (e.g., MDMER) or in a permit or license (e.g., a Manitoba Environment Act License). There are no Tier I standards applicable to the Sherridon project.

- Tier II Objectives – These have been defined for a limited number of common pollutants and typically are applied to receiving waters rather than to discharges; representing the concentrations to be achieved after allowance for mixing. Tier II objectives are established for long-term (chronic) exposures and for short-term (acute) exposures. The acute exposure objectives typically are higher than the chronic exposure objectives. Some Tier II Objectives for metals are calculated on the basis of the water hardness for a specific water body, with the objective increasing with water hardness. Hardness provides protection against the toxicity of some metals. Tier II Objectives are targets that should be met most of the time, except during extraordinary climate conditions (e.g., severe drought) or when background concentrations exceed the objective.

- Tier III Guidelines – These cover a wide range of water quality parameters that are not otherwise included in the Tier II Objectives and include both numerical and narrative guidelines. The Tier III numerical guidelines provide a basis for evaluation of water quality, and a means to evaluate any need for site-specific criteria, but do not require strict compliance. The Tier III narrative guidelines, which refer to general non-numeric water quality characteristics, should be met at all times.

Data screening primarily focused on what we have termed, since 2015, the "key parameters" for the project: pH, alkalinity, TSS, and the total fractions of the metals iron, aluminum, cadmium, copper, and zinc. The key parameters are those which have been found to be relevant to understanding the effects of water from Camp Lake on receiving water quality in Cold Lake. Some of the key parameters have historically occurred in Camp Lake in concentrations at or above the applicable MWQSOGs (pH, aluminum, cadmium, copper, iron, and zinc; Tetra Tech WEI (2016) and DJRC (2016)). Alkalinity was first introduced as a key parameter to track the performance of lime treatments and, through its consumption over the season, as a measure of continuing acid sources to the lake. With the lime treatment discontinued and Sherlett Creek inflow augmenting buffering capacity in Camp Lake, alkalinity is now monitored to assess the performance of the project in maintaining adequate alkalinity. TSS is a focus because of local concerns regarding the effect of any discharge from Camp Lake on the appearance of water in Cold Lake.

Turbidity, both field and lab measured, was added to the analyses in the 2017 program, and has been continued, to provide another means of detecting possible changes in appearance of the water and is considered here as a key parameter.

Table 4. Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOGs; Manitoba Water Stewardship 2011) for protection of cool water aquatic life applicable to Cold Lake arm of Kississing Lake. Units are mg/L except as noted. Key parameters in bold face.

Parameter	TIER II Objective (acute)		TIER II Objective (chronic)		TIER III Guideline
	Dissolved	Total	Dissolved	Total	
TSS	--	25 mg/L increase[a]	--	5 mg/L increase[a]	--
pH (pH Unit)	--	--	--	--	6.5 to 9.0
Nitrite	--	--	--	--	0.06
Dissolved Oxygen	5.0	--	6.0	--	--
Ammonia[b]	3.976	--	9.939	--	--
Phosphorus	--	--	--	--	0.025 (total)
Aluminum (Al)	--	--	--	--	0.1 (total; pH ≥6.5) 0.005 (total; pH < 6.5)
Arsenic (As)	0.340	--	0.150	--	--
Cadmium (Cd)[c]	0.00121	0.00125	0.00017	0.00018	--
Chromium (Cr^{III})[c]	0.372	1.176	0.048	0.056	--
Copper (Cu)[c]	0.00823	0.00857	0.00574	0.00598	--
Iron (Fe)	--	--	--	--	0.3 (total)
Lead (Pb)[c]	0.0365	0.0421	0.00142	0.00164	--
Mercury (Hg)	--	--	--	--	0.000026 (total)
Molybdenum (Mo)	--	--	--	--	0.073 (total)
Nickel (Ni)[c]	0.301	0.302	0.0335	0.0336	--
Selenium (Se)	--	--	--	--	0.001 (total)
Silver (Ag)	--	--	--	--	0.0001 (total)
Thallium (Tl)	--	--	--	--	0.0008 (total)
Uranium (U)	--	--	--	--	0.015 (total)
Zinc (Zn)[c]	0.0754	0.0771	0.0760	0.0771	--

a. Increase over background concentration. In the case of Sherlett Creek, analysis of all available TSS data for the 2017-2021 period indicates the maximum observed concentration was 6.5 mg/L, for a Tier II chronic exposure objective of 11.5 mg/L. This objective also applies to Camp Lake and Cold Lake.
b. Calculated as per Manitoba Water Stewardship (2011) using pH 7.6 and 10 °C.
c. Calculated as per Manitoba Water Stewardship (2011) using mean total hardness of 59.4 mg/L as $CaCO_3$ as measured in Cold Lake on 11 May 2016.

The Tier II objectives for six metals (cadmium, chromium, copper, lead, nickel, and zinc) are determined by water hardness, and the objectives increase with increasing water hardness based on the equations presented in Manitoba Water Stewardship (2011). The objectives for the six metals were initially calculated for Cold Lake based on the 11 May 2016 pre-discharge mean surface hardness value of 59.4 mg/L as $CaCO_3$ (DJRC 2016). In 2017, 102 near-surface hardness

measurements were made at stations CL2, CL3, CL4, CL5, CL6, CL7, and CL8. The mean hardness over those measurements was 60.1 mg/L as $CaCO_3$, which is the same as the initial value for 11 May 2016 within the sampling/analytical precision of +/- 25%. Consequently, the Tier II objectives for cadmium, chromium, copper, lead, nickel, and zinc have been maintained as stated in DJRC (2016). Higher hardness concentrations typically occurred in the near-bottom samples than in the surface samples from Cold Lake stations CL2, CL4, CL5, and CL6 where thermal stratification developed during the open water season. The lower near-surface values have been used for Tier II objective calculation.

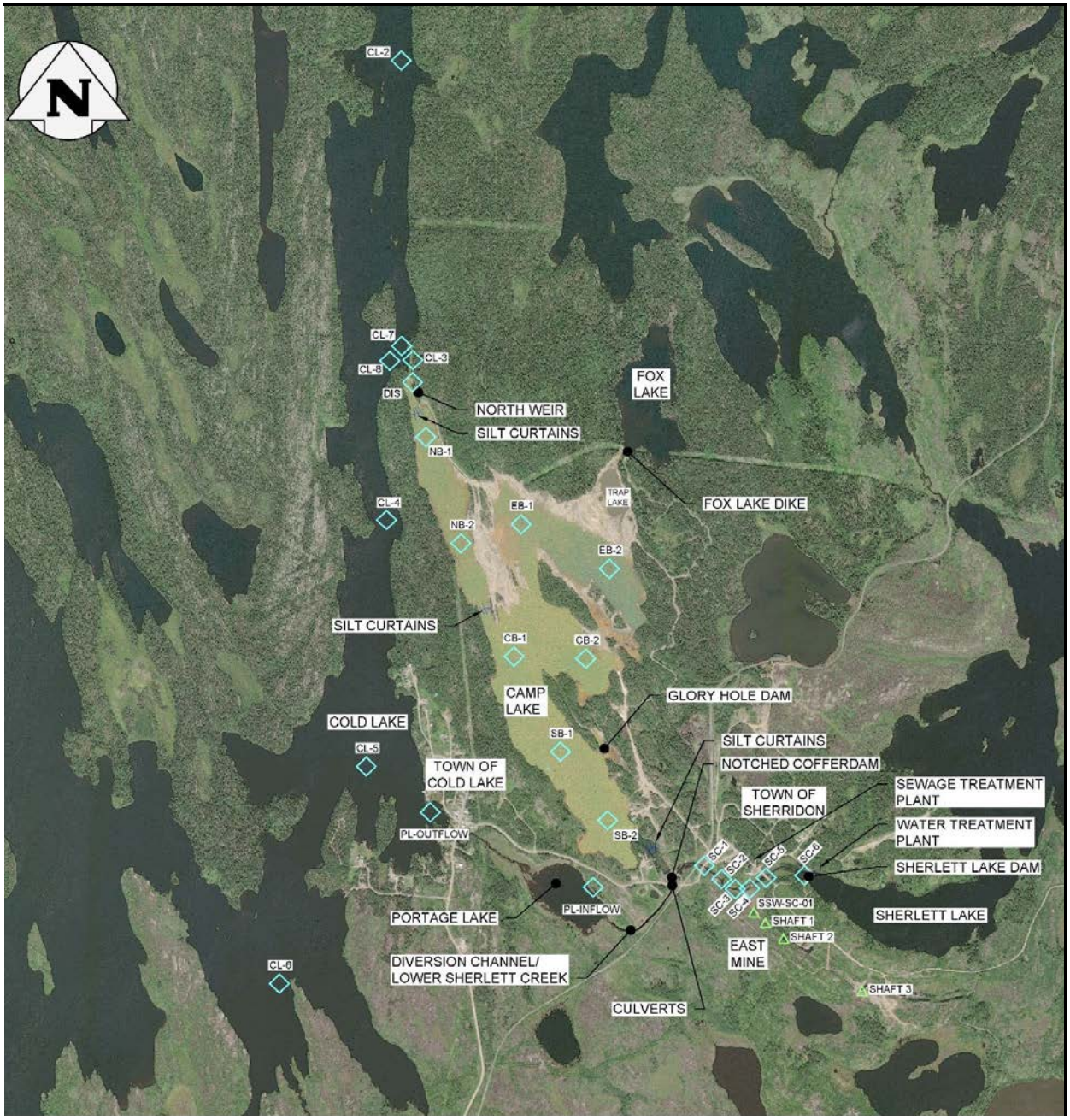

Figure 2. Sherridon Orphan Mine Site Reclamation Project Overview Map (From Tetra Tech Canada Inc.).

Figure 3. Camp Lake water quality monitoring station locations.

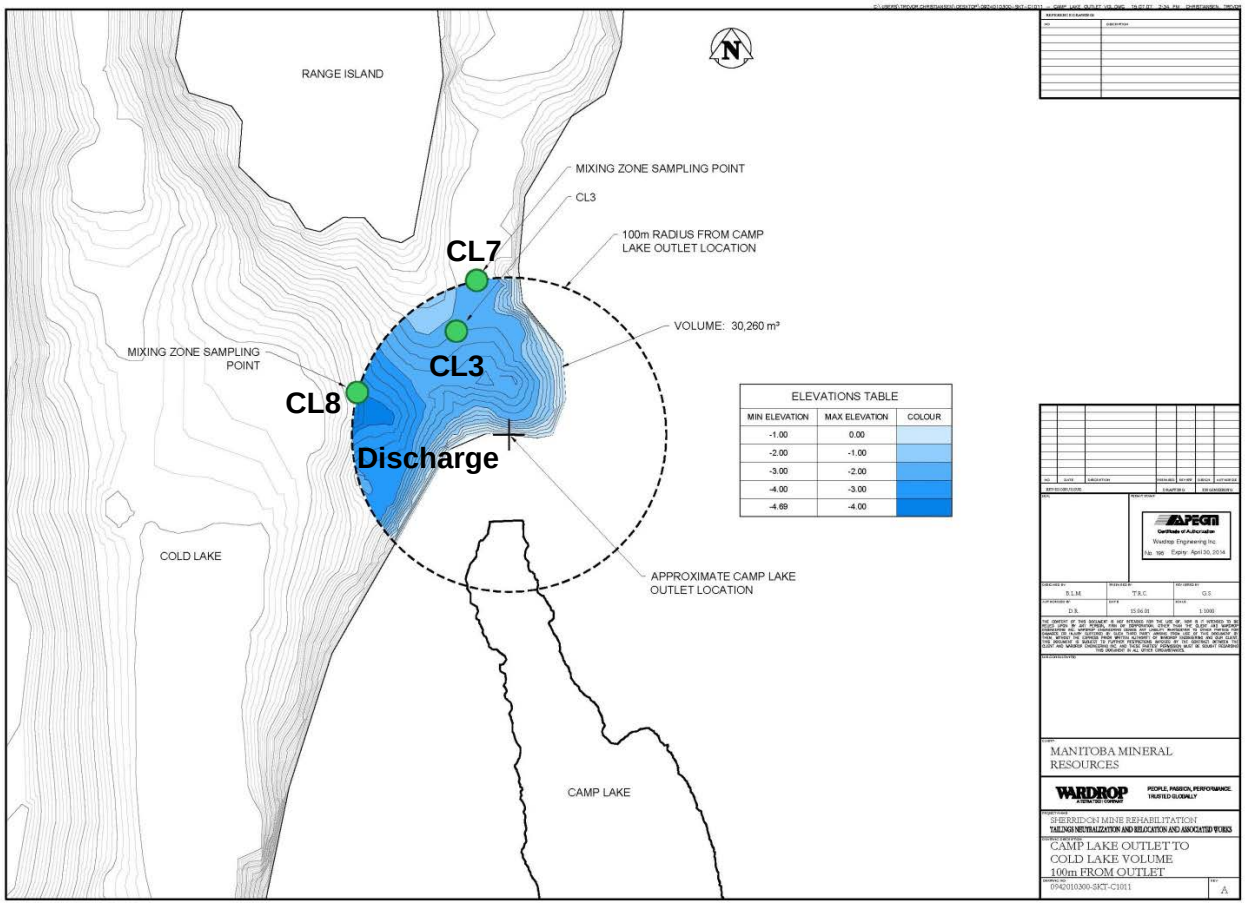

Figure 4. Camp Lake discharge mixing zone in Cold Lake and locations of sampling stations (Discharge, CL3, CL7, and CL8).

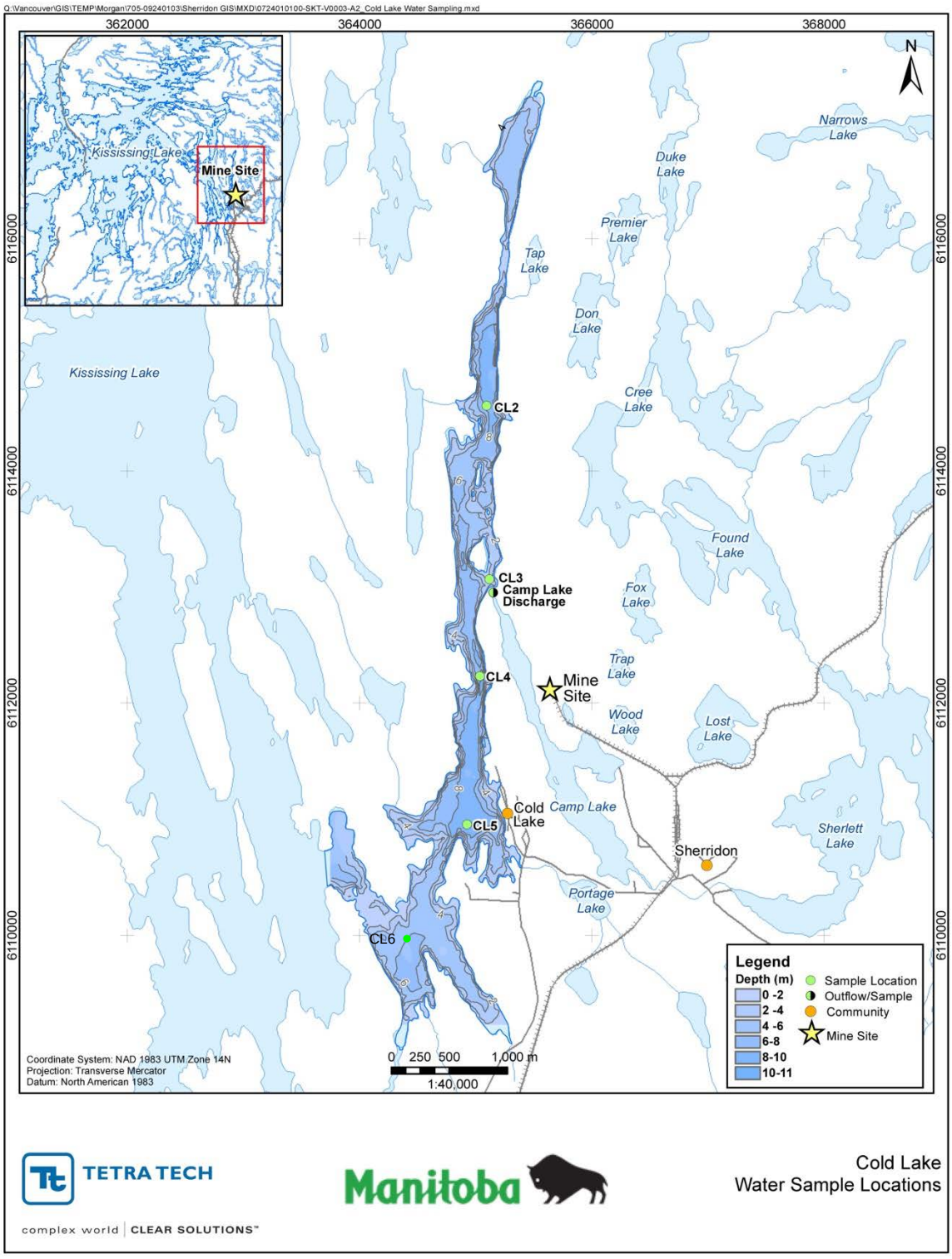

Figure 5. Water quality monitoring station locations in the Cold Lake arm of Kississing Lake.

3.0 Results and Discussion

The 2021 water quality monitoring program represents the third full year of Sherlett Creek flow through Camp Lake in the absence of a lime treatment. As was the case in 2020, construction was active in the areas of remaining mine waste adjacent to the East basin, primarily, as well as along the remaining section of the access road (Figure 1).

The focus of the following summary is on the key water quality parameters of pH, alkalinity, TSS, and turbidity, and the metals total iron, aluminum, cadmium, copper, and zinc. All field data are tabulated in Appendix A. Laboratory analyses are tabulated in Appendix B.

3.1 Precipitation and Water Quality

Analysis of the water quality monitoring results in 2018 through 2020 (DJRC 2019, 2020, and 2021) demonstrated the importance of precipitation events in understanding temporal changes in Camp Lake water quality, and consequently in Camp Lake discharge quality. No precipitation data are available for the fire weather station at Sherridon in 2021, but estimated values are available for the community based on regional climate models (Table 5). Winter 2020-21 precipitation was about average compared to the previous 10 years, but spring precipitation was the second lowest of the preceding decade and was followed by summer precipitation that was 48% of the next lowest year (2015) and only 27% of the decade mean. As a result, total April through September precipitation also was the lowest of the preceding decade, at 68% of the next lowest year (2013) and 51% of the decade mean. Compared to 2018, 2019, and 2020, precipitation was lower in all seasons of 2021, but particularly in spring and summer (Table 5).

The key precipitation features relevant to Camp Lake water quality in 2021and winter 2022 include:

- Average winter precipitation, following a wet 2020, contributed to early season runoff flows similar to June 2020 and higher than in June 2019
- There were few heavy rainfall events overall, and none of note after June 16.
    - May 14 (17.2 mm) and 25 (9.7 mm)
    - June 4 (35.3 mm), 11 (26.5 mm), and 16 (17.7 mm)
    - July 2 (10.1 mm)
    - September 13 (5.1 mm)

The result of the very low post-freshet precipitation in 2021 was a lake level, and therefore discharge, by early July, that was lower than at any time during the 2020 open water season, and by mid-August was lower than in both 2019 and 2020 (Figure 6). The Camp Lake discharge effectively ended at the end of August due to very low Sherlett Creek flows, and this condition continued through freeze up and past early March, when the last sampling event was completed (Figure 7 a, b, and c).

Table 5. Estimated monthly precipitation (mm as water) at Sherridon, Manitoba, for the 2011 through 2021 water years[a]. From www.worldweatheronline.com

Month	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Oct	61.5	66.4	159.7	29.8	59.9	66.3	228.5	82.8	52.8	51.5	65.2
Nov	29.6	35.4	41.3	89.9	31.3	61.1	36.8	56.0	32.6	31.7	44.4
Dec	34.2	38.5	25.6	28.3	9.8	39.3	26.2	20.3	27.5	33.0	26.6
Jan	51.6	45.3	49.3	53.1	34.2	23.5	25.0	71.0	40.1	52.0	63.2
Feb	39.7	20.7	19.7	12.1	23.1	33.4	20.1	14.8	19.1	19.5	29.5
Mar	40.2	83.1	23.5	37.5	63.7	74.2	126.0	58.3	19.2	54.9	65.6
Apr	85.3	90.2	69.9	67.1	62.2	42.7	97.2	33.6	54.7	98.3	29.9
May	98.2	38.5	42.1	69.2	51.8	73.1	122.8	45.5	61.2	79.7	77.6
Jun	68.7	147.1	150.0	152.8	74.8	179.1	202.3	145.1	127.9	251.5	101.7
Jul	163.0	76.3	86.2	74.2	172.9	125.7	29.7	265.7	109.3	208.0	40.4
Aug	118.4	106.6	24.4	22.9	87.7	49.7	23.7	43.2	64.1	64.2	17.1
Sep	23.0	34.0	37.6	54.8	122.6	127.7	108.8	78.6	69.9	65.0	12.9
Total	**813.4**	**782.0**	**729.3**	**691.6**	**793.9**	**895.9**	**1047**	**914.9**	**678.4**	**1009**	**574.1**
Winter[b]	256.8	289.4	319.1	250.7	221.9	297.8	462.6	303.2	191.3	242.6	294.5
Spring[c]	252.2	275.8	262.0	289.1	**188.8**	295.0	422.3	224.2	243.8	429.5	**209.2**
Summer[d]	304.4	216.8	148.2	151.9	383.2	303.1	162.2	387.5	243.3	337.2	**70.4**
Apr-Sep	556.6	492.7	410.2	441.0	572.0	598.1	584.5	611.7	487.1	766.7	**279.6**

a. A water year in the northern hemisphere starts on October 1 and runs to September 30 of the following year (e.g., the 2020 water year started on October 1, 2019). This approximates the period of precipitation contributing to surface runoff each year, accounting for accumulation of snowfall over winter and release to runoff in spring.
b. Winter – October through March
c. Spring – April through June
d. Summer – July through September

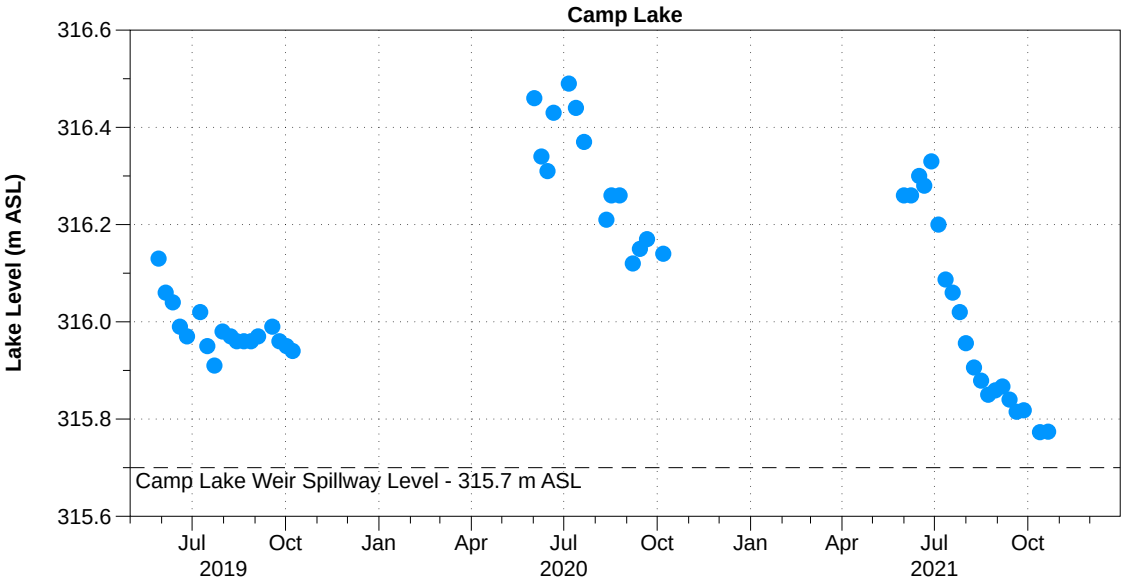

Figure 6. Camp Lake levels in the open water seasons of 2019 through 2021.

Figure 7. Camp Lake Discharge Spillway. a. 30 August 2021. b. 19 October 2021. c. 21 March 2022.

3.2 Sherlett Creek

As the project moves from the construction phase to post-construction monitoring, water quality in Sherlett Creek is expected to take on a leading role in determining water quality in Camp Lake on the basis of pre-construction water quality model predictions (SENES 2008; DJRC 2022a).

3.2.1 SC-1

Station SC-1 is located on Sherlett Creek, immediately upstream of the Portage Road bridge crossing (Figure 2) and is the long-term monitoring station used to document the quality of water entering Camp Lake from the creek. The station elevation is well above the water level at the mouth of the diversion channel and in Camp Lake, so any variation in water quality at SC-1 is not due to an influence of the reclamation works around Camp Lake.

3.2.1.1 pH and Alkalinity

The monitoring focus on field pH values started in 2018 was continued to the present for all locations. Water pH begins to change as soon as a sample is exposed to air, due to the exchange of gases that results from sample collection (e.g., CO_2 combines with water to form carbonic acid, and that reduces the pH of an air-exposed sample), such that a field pH measurement made within 15 minutes of sample collection is considered to be more representative of actual conditions and is the method of pH determination required by the MDMER for compliance monitoring (Environment Canada 2012). Laboratory pH values also are presented for all stations to allow comparison with previous years' data.

Field pH at SC-1 has ranged between 6.5 and 8.0 from spring 2017 to winter 2022 (Figure 8a). No distinct seasonal trends consistently occurred, although there was an indication of declining pH during the late summer low flow periods in both 2017 and 2021. In both cases, field pH rebounded over the following winter. Lab pH at SC-1 varied over a slightly wider range during this period, dropping lower than seen in the field values to 6.2 in July 2020 and to 6.15 in February 2021 (Figure 8b).

Total alkalinity concentrations at SC-1 have typically been in the range of 20 to 30 mg $CaCO_3$/L (Figure 9). Values were occasionally higher than 30 mg $CaCO_3$/L (i.e., 30 to 37 mg $CaCO_3$/L from Aug 31 to Oct 19, 2017; and 30 to 33 mg $CaCO_3$/L in January and February 2021; Figure 9) and were below 20 mg/L just once (5.1 mg $CaCO_3$/L on Sep 13, 2021). No upward or downward trend was evident in alkalinity over the 5 years of study. The single very low value (5.1 mg $CaCO_3$/L) measured on 13 September 2021 is anomalous.

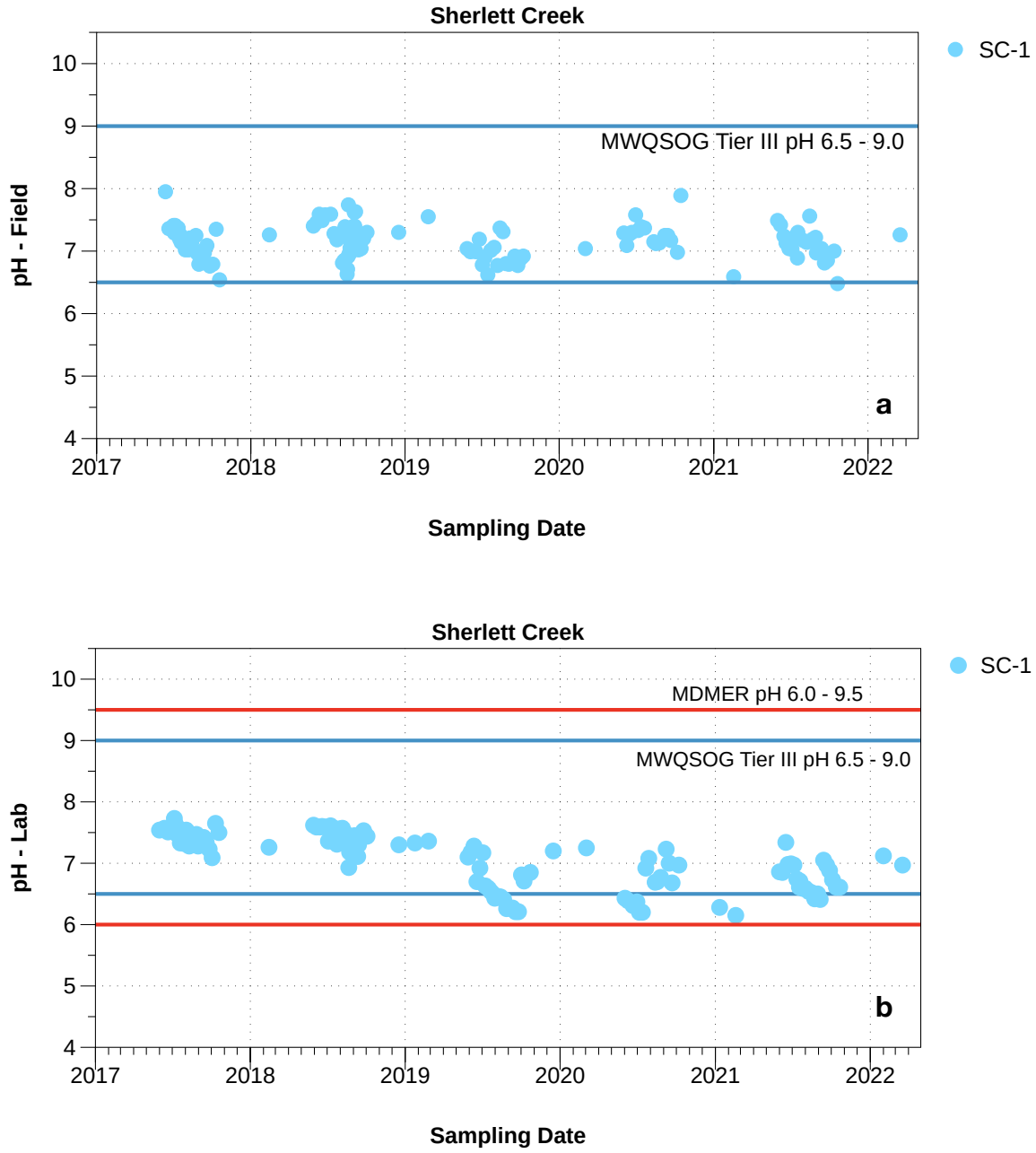

Figure 8. Field (a) and Lab (b) pH at Sherlett Creek station SC-1; 2017 to March 2022.

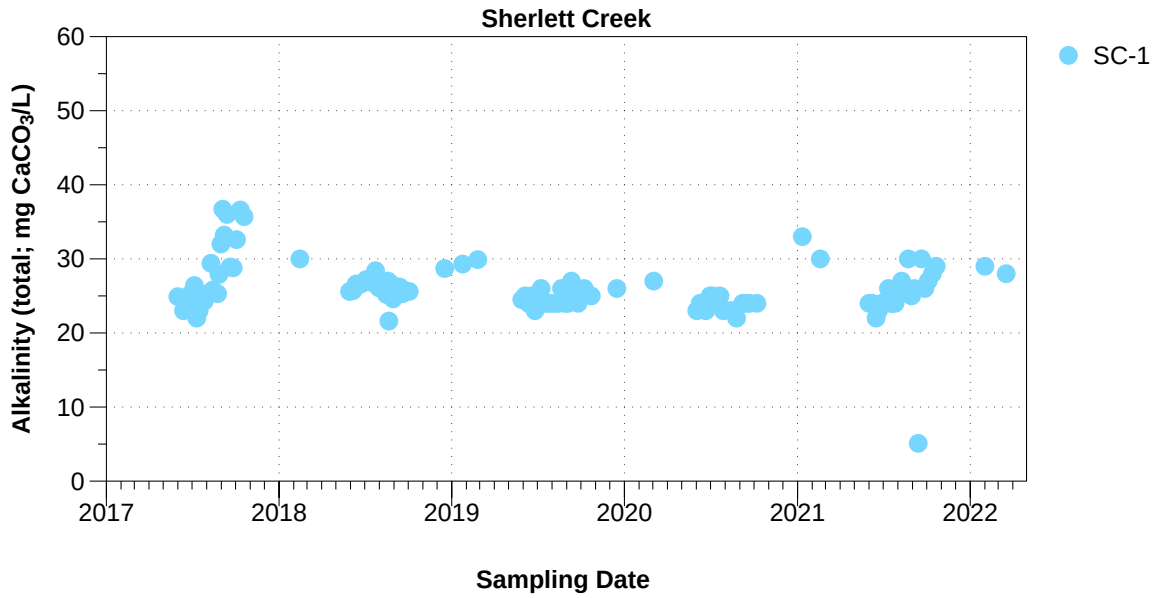

Figure 9. Total alkalinity at Sherlett Creek station SC-1; 2017 to March 2022.

3.2.1.2 TSS, Turbidity, and Iron

The laboratory analytical detection limit for TSS was 4 mg/L through winter 2019 and was lowered to 1 mg/L beginning in June 2019 and continuing through winter 2022. Total suspended solids concentrations at SC-1 have typically been at or below 5 mg/L over the past 5 years, except for values in the range of 6.0 to 6.5 mg/L in October 2017 (Figure 10).

There was no clear effect of extreme low flows on TSS at SC-1. TSS gradually increased through the 2017 open water season, as flows decreased. But TSS during the Sep-Oct low flow period in 2021 was comparable to values in spring and early summer when flows were higher (Figure 10).

Turbidity at SC-1 typically was below 4 NTU except during two open water season low flow periods, the first in Sep-Oct 2017 and the second in Sep-Oct 2021 (Figure 11). A single high turbidity value (8.5 NTU) on 11 September 2018 was more than twice any other measurement that season. The field turbidity value on that date was 5.3 NTU, which is consistent with the lab and field measurements on dates before and after, suggesting the lab value is anomalous and possibly due to sampling error.

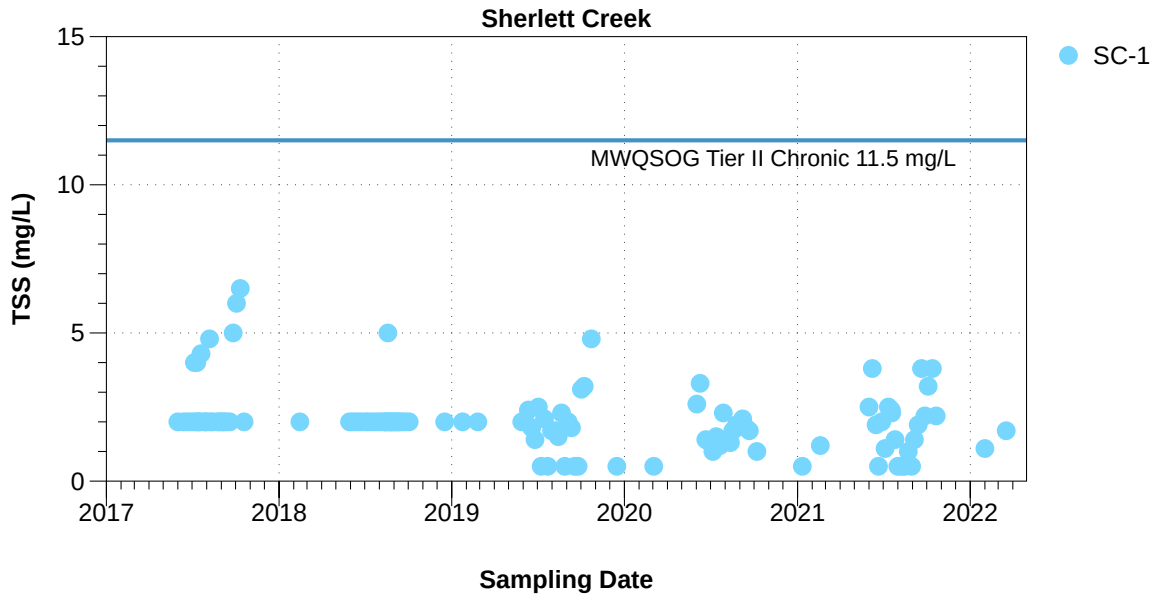

Figure 10. Total suspended solids concentrations at Sherlett Creek station SC-1, 2017 through March 2022. Note the detection limit was reduced from 4.0 mg/L in 2018 and earlier years to 1.0 mg/L in 2019 and later years. Values below the detection limit are plotted as equal to one-half the detection limit.

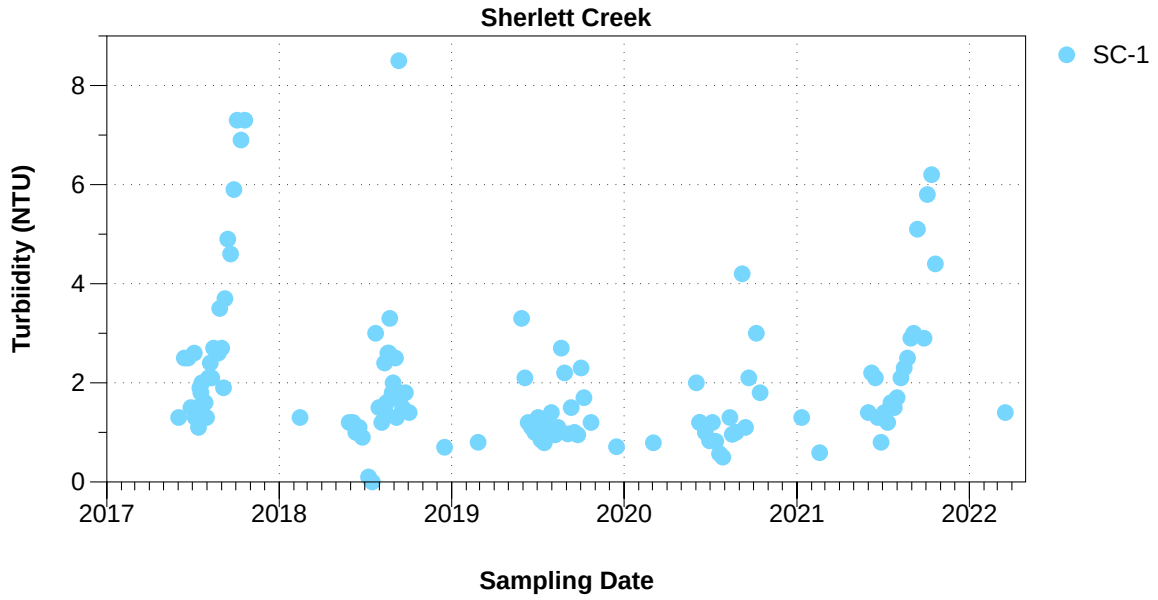

Figure 11. Turbidity (NTU) at Sherlett Creek station SC-1, 2017 through March 2022.

Total iron concentrations were typically below 0.4 mg/L over the five years of monitoring, other than during the Sep-Oct low-flow periods in 2017 and 2021, when total iron increased to as much as 1.0 mg/L, or on a single date 11 September 2018, when total iron was 0.61 mg/L (Figure 12). The same temporal pattern is evident in the particulate iron concentrations (Figure 13).

Particulate iron concentrations were closely correlated with total iron through this period (Figure 14).

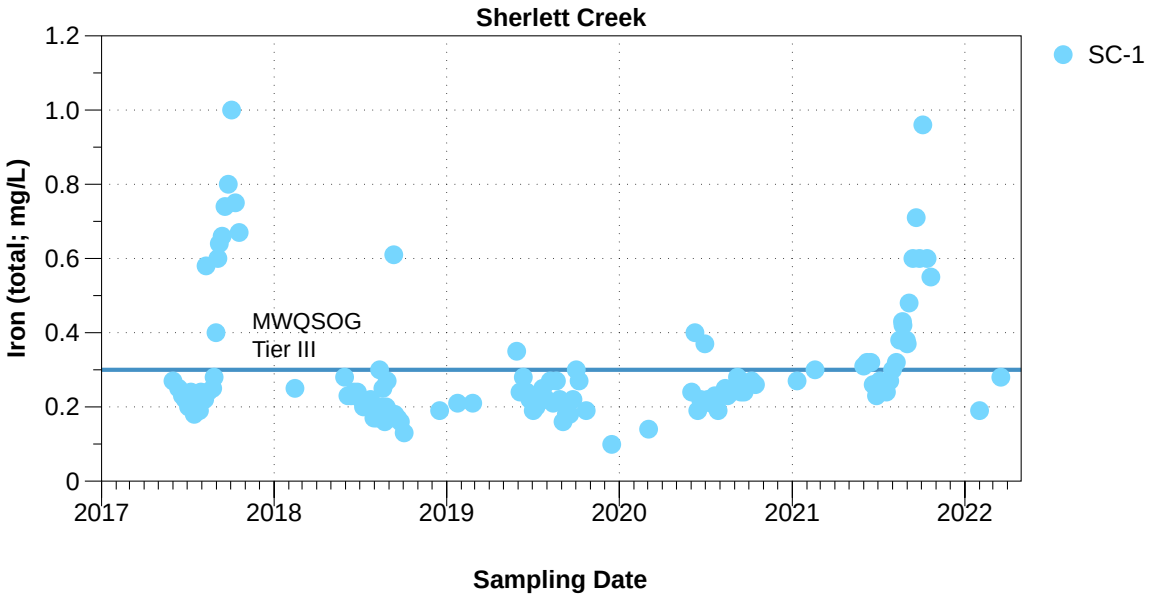

Figure 12. Total iron concentrations at Sherlett Creek station SC-1, 2017 through March 2022.

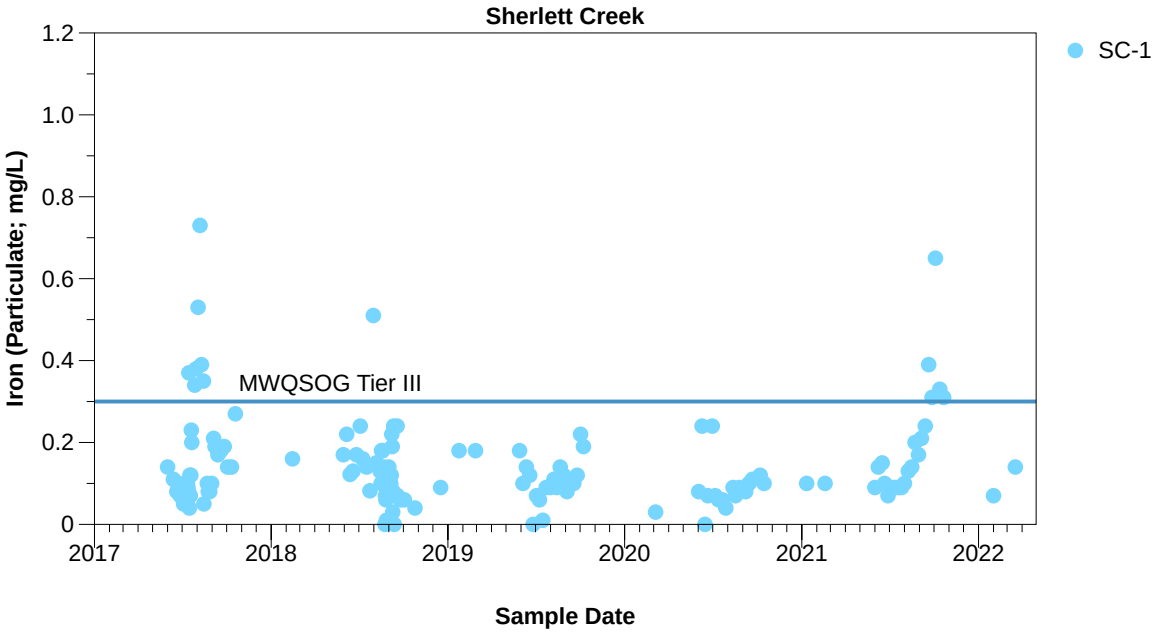

Figure 13. Particulate iron concentrations at Sherlett Creek station SC-1; 2017 through March 2022.

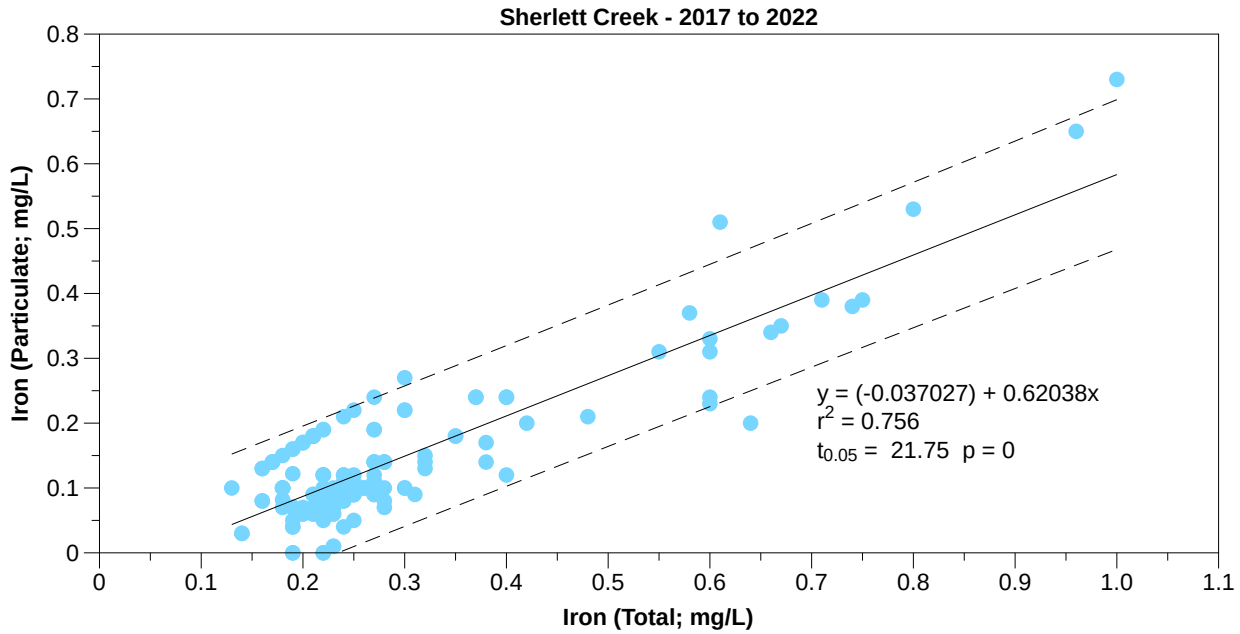

Figure 14. Relationship between total and particulate iron (mg/L) at Sherlett Creek station SC-1; 2017 through March 2022.

Water quality monitoring in Camp Lake in 2018, 2019, and 2020 found turbidity was positively correlated with particulate iron concentrations (DJRC 2019, 2020, and 2021). Turbidity also was positively correlated with particulate iron in Sherlett Creek from 2017 through March 2022 (Figure 15).

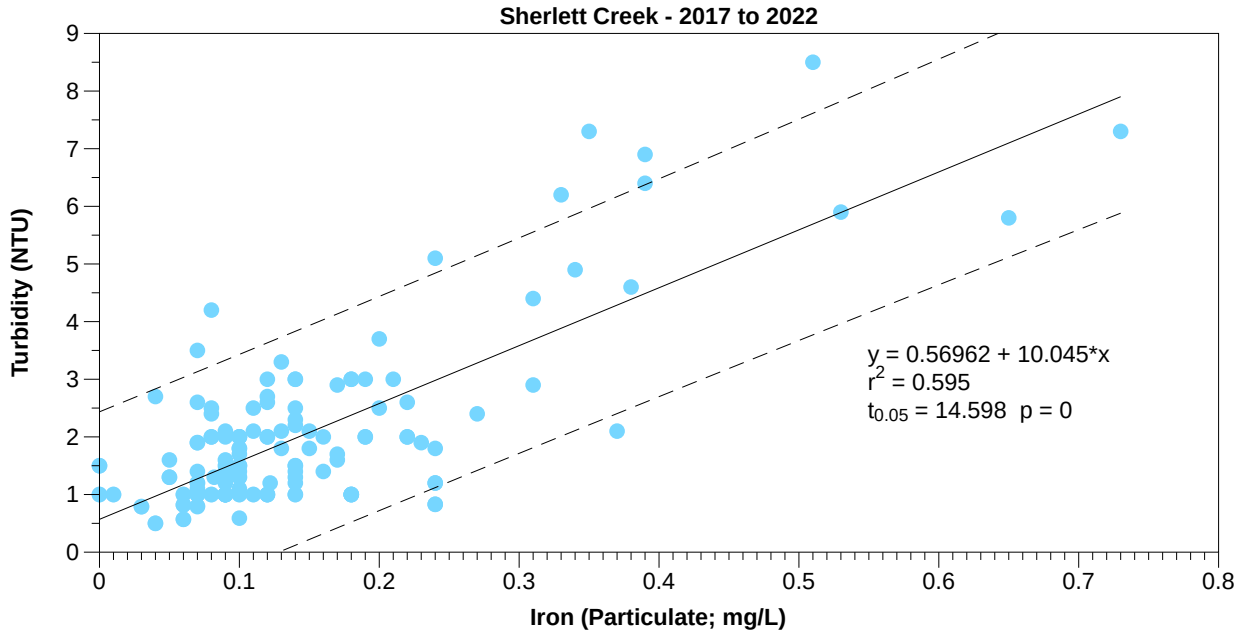

Figure 15. Relationship between particulate iron (mg/L) and turbidity (NTU) at Sherlett Creek station SC-1; 2017 through March 2022.

3.2.1.3 Metals

In previous years, cadmium, copper, and zinc concentrations in Sherlett Creek were compared to the MWQSOG Tier II aquatic life criteria calculated for the protection of Cold Lake using the measured Cold Lake hardness. However, with the return of elevated concentrations of these metals during the low flow period in 2021, specific Tier II criteria have been calculated for total cadmium, copper, and zinc using the measured Sherlett Creek hardness, to better assess the potential implications of the elevated concentrations on aquatic life. Total hardness averaged 31.0 mg $CaCO_3$/L and ranged between 27 and 40 mg $CaCO_3$/L in 2021 (Appendix Table B.10). The resulting hardness-based Tier II criteria are listed in Table 6.

Table 6. Hardness-based Tier II Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOGs; Manitoba Water Stewardship 2011) for protection of cool water aquatic life applicable to Sherlett Creek. Units are mg/L except as noted. All other MWQSOGs applicable to Sherlett Creek as listed in Table 4.

Parameter	TIER II Objective (acute)		TIER II Objective (chronic)	
	Dissolved	Total	Dissolved	Total
Cadmium (Cd)	0.00064	0.00065	0.00011	0.00011
Chromium (Cr^{III})	0.218	0.691	0.0284	0.0330
Copper (Cu)	0.00446	0.00464	0.00329	0.00343
Lead (Pb)	0.0177	0.0184	0.00069	0.00072
Nickel (Ni)	0.174	0.174	0.0193	0.0194
Zinc (Zn)	0.0434	0.0444	0.0438	0.0444

Aluminum

Total aluminum concentrations typically ranged between 0.02 and 0.10 mg/L over the 5 years of monitoring (Figure 16). Noteworthy exceptions included the Sep-Oct low-flow periods in both 2017 and 2021, when total aluminum ranged as high as 0.19 mg/L in 2017 and 0.27 mg/L in 2021. Unusually high concentrations occurred in 2018 (0.26 mg/L on August 6 and September 11) in the absence of any clear flow-related explanation, although several metals (iron, cadmium, copper, and zinc) all occurred at near-seasonal high concentrations on September 11, 2018, around the time of a heavy rainfall event.

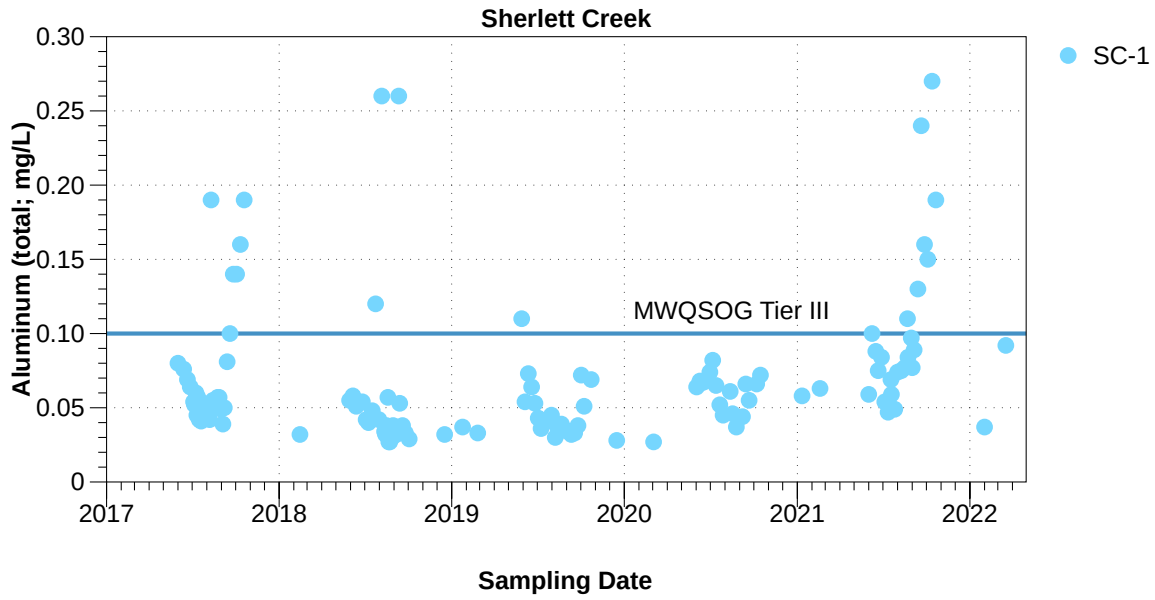

Figure 16. Total aluminum concentrations at Sherlett Creek station SC-1, 2017 through March 2022.

Cadmium

The lowest total cadmium concentrations occurred at SC-1 under winter ice cover, in the range of 0.000054 mg/L (February 2019) to 0.00016 mg/L (February 2021), in all 5 years (Figure 17). Total cadmium concentrations in the open water season typically ranged between 0.00010 and 0.00050 mg/L over the past five years of monitoring, exceeding the MWQSOG Tier II chronic exposure objective (0.00011 mg/L) most of the time. Notably higher concentrations occurred during low-flow periods in Sep-Oct 2017 and Sep-Oct 2021, during which concentrations reached 0.0017 mg/L on 11 Sep 2017 and 0.00075 mg/L on 27 Sep 2021.

Occasionally higher concentrations also occurred in 2018 and these are not traceable to low-flow conditions. Instead, these were in the form of two large and short-lived peaks in total cadmium, the first on July 24 and the second on September 11 and 13. Both peaks coincided with heavy rainfall periods, as previously noted in DJRC (2019). A similar total cadmium peak (0.00084 mg/L) occurred on July 31, 2019, also coinciding with a heavy rainfall event (DJRC 2020), and all three peaks in the two years appear to have been driven by surface runoff, with runoff from the area of the former East Mine Workings the most likely source of contamination. Runoff-related spikes in metal concentrations are much shorter-lived than the increases that develop during low-flow conditions, persisting on the order of days, reflecting the transient nature of the surface runoff. The extreme low flow conditions that occurred in both 2017 and 2021 developed over time and persisted for an extended period, from August past freeze up in October and into the winter ice-cover period, resulting in the gradually increasing and continued high metal concentrations that occurred in both years.

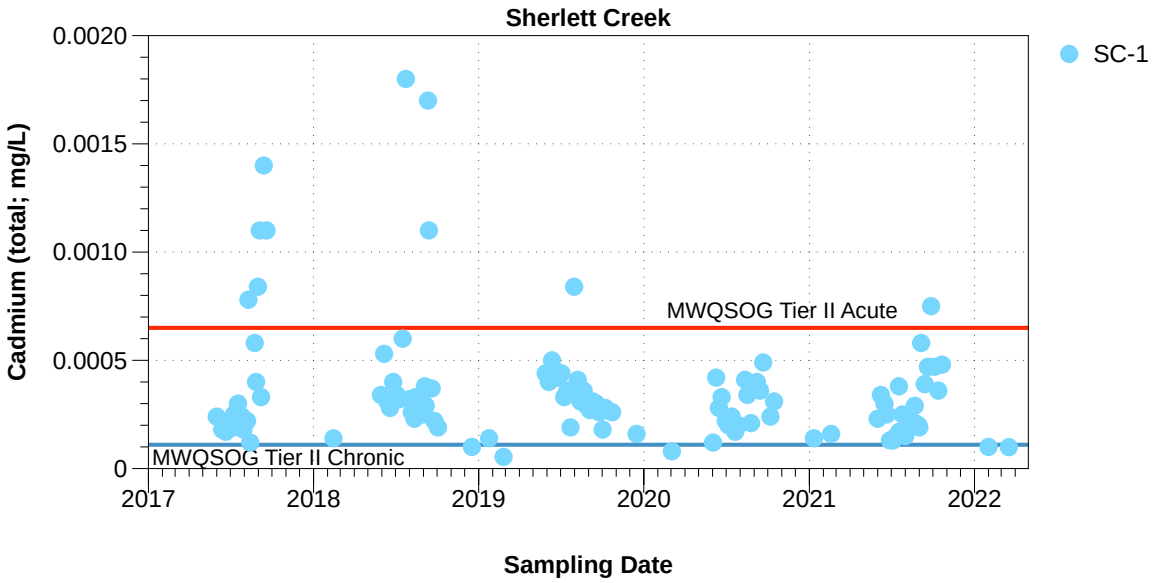

Figure 17. Total cadmium concentrations (mg/L) at Sherlett Creek station SC-1; 2017 through March 2022.

Copper

Total copper concentrations have generally ranged between 0.0030 mg/L and about 0.020 mg/L over the 5 years of monitoring, with the lowest concentrations typically occurring under winter ice cover (Figure 18). Copper concentrations were less strongly influenced by flow conditions than were the other metals; increasing concentrations outside of the typical range developed during the Sep-Oct 2017 low-flow period but no distinct increase developed during the 2021 low-flow period. Distinct peaks in copper concentrations occurred coincident with heavy rainfall periods in 2018 and 2019, the first on 24 July 2018, the second on 11-13 September 2018, and then again on 31 July 2019. As noted above for cadmium, the timing of these peaks implicates surface runoff as the source of the copper. However, the generally high total copper concentrations are not well-explained by surface runoff, and this was most evident during the summer and fall of 2021, when rainfall was almost absent, as discussed in Section 3.1 above.

Total copper concentrations exceeded both the MWQSOG Tier II chronic and acute objectives most of the time from 2017 through March 2022, with concentrations below the Tier II chronic objective primarily occurring in winter.

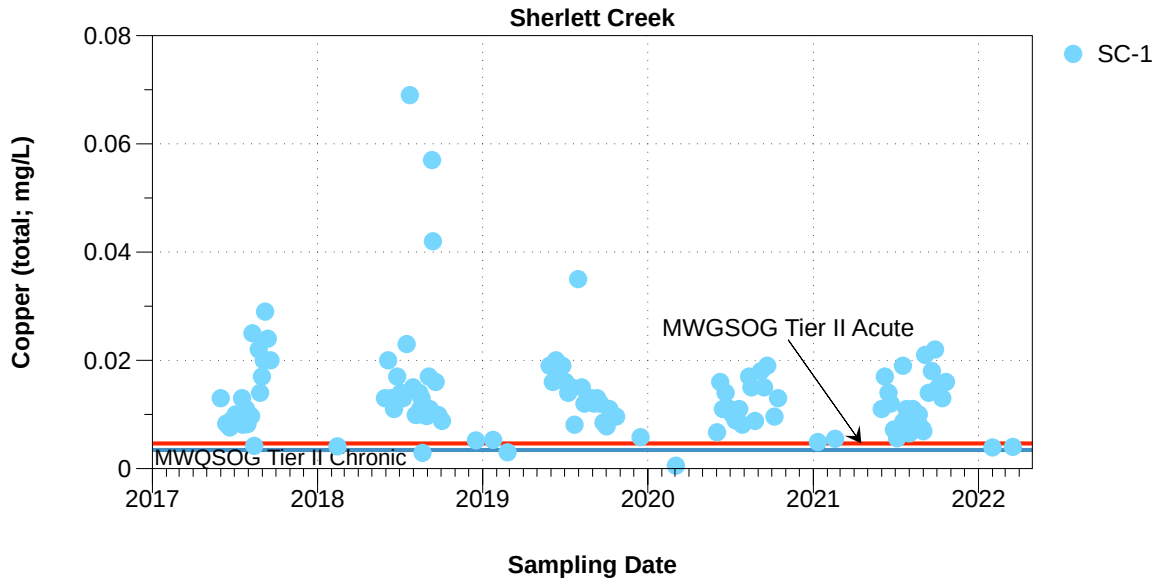

Figure 18. Total copper concentrations (mg/L) at Sherlett Creek station SC-1; 2017 through March 2022.

Zinc

Total zinc concentrations generally ranged between 0.024 and 0.20 mg/L except during the Sep-Oct low flow periods in 2017 and 2021, or during the 2018 and 2019 high rainfall events, when higher zinc concentrations occurred (Figure 19) as noted above for iron, aluminum, cadmium, and copper.

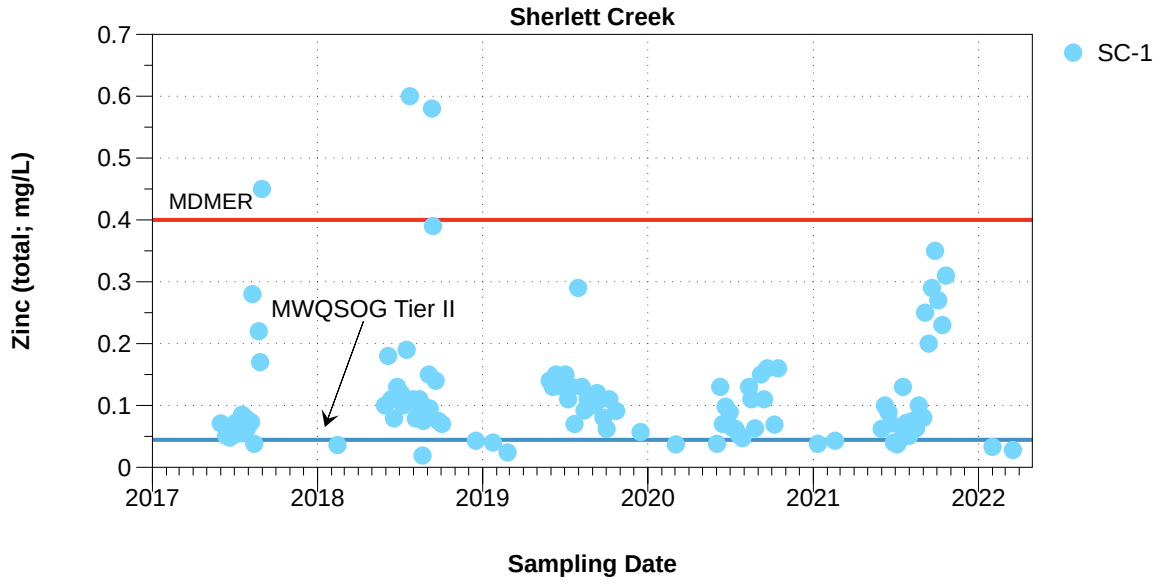

Figure 19. Total zinc concentrations (mg/L) at Sherlett Creek station SC-1; 2017 through March 2022.

3.2.2 Detailed Sampling

A more detailed sampling program has been conducted periodically on Sherlett Creek, involving several locations between Sherlett Lake and Camp Lake. The detailed sampling was done initially in 2006, to support project planning, and subsequently in 2009, 2017, 2018, and 2021 to assess the potential source(s) of elevated metal concentrations.

The detailed sampling typically involves 5 additional stations on Sherlett Creek upstream of SC-1; SC-2 through SC-6, with SC-6 located at the outlet of Sherlett Lake (Figures 2 and 20). Detailed sampling was conducted on multiple dates in 2021 and in February 2022. The 2021/2022 sampling was initiated following a report by a Sherridon resident of overland flow from the vicinity of the East Mine Workings. Results are summarized below by sampling date.

18 July

All of cadmium, copper, and zinc were substantially elevated at SC-3, SC-2, and SC-1, but not at SC-4, SC-5, or SC-6 on July 18 (Figure 20). Although elevated at all three locations, concentrations of all three parameters declined sequentially moving downstream from SC-3 to SC-1. The appearance of elevated concentrations at SC-3 compared to upstream locations is consistent with sampling in 2017 (DJRC 2018). Based only on proximity, this finding appeared to indicate the elevated concentrations are associated in some way with the East Mine Workings south of the creek. However, subsequent investigation in 2021/2022 indicate the explanation is not that simple and will require further investigation to identify the source or sources of the metal contamination.

26 July

All of cadmium, copper, and zinc also were substantially elevated at SC-3, SC-2, and SC-1 on July 26, but not at SC-4 or SC-5; SC-6 wasn't sampled (Figure 21). Values were about the same at SC-3 and SC-2 and were lower at SC-1. The finding of declining metal concentrations between SC-3 and SC-1 on both July 18 and 26 is puzzling given the short distance between the stations and the absence of an obvious diluting inflow entering this reach of the creek. Subsequent investigation (August 22 and September 1) determined that the measured concentrations of these metals at both SC-2 and SC-3 varied with distance from the North stream bank.

9 August

The August 9 results (Figure 22) confirmed the findings previously noted on July 18 and 26 (Figures 20 and 21). Concentrations of all three metals at SC-1 on August 9 were the same as on July 26 and were 34 to 42% lower than on July 18. Cadmium exceeded the Tier II chronic exposure objective (0.00011 mg/L). Copper exceeded the Tier II acute exposure objective (0.00464 mg/L). The total zinc concentration exceeded the Tier II acute/chronic exposure objective (0.0444 mg/L).

At SC-2 and SC-3, copper and zinc concentrations were higher on August 9 than on July 26, while cadmium concentrations were lower. Any such apparent temporal variations at these stations should be interpreted cautiously, however, because the concentrations measured at these stations vary substantially with distance from the North bank, as was subsequently found on 22 August. It is not possible to quantify temporal trends at either SC-2 or SC-3 based on a single sample from these stations.

22 August

Multiple samples were taken along channel cross-sections at all the established Sherlett Creek sampling locations, except SC-5 where a single sample was collected, on August 22 (Figures 23, 24, and 25). The original purpose for this very detailed sampling was to determine if any modifications to the sampling approach are needed to ensure representative sampling of the creek. The sampling results also provided new information regarding the potential source of the metal contamination that becomes evident during low flow periods, and these results provide a different picture of how the metal contamination is entering the creek than previously considered.

The results are consistent with previous studies in that the metal contamination becomes evident at station SC-3, but also indicates that the source is closely associated with the North bank of the creek. The highest concentrations of total cadmium, copper, and zinc occurred closest to the North bank at both SC-3, and SC-2, and decreased with distance away from the North bank such that the lowest concentrations were measured adjacent to the South bank. Exceedances of the applicable MWQSOG Tier II chronic (cadmium) and acute (copper and zinc) exposure objectives also were concentrated between the North bank and approximately mid-channel. No acute objective exceedances occurred adjacent the South bank at either SC-2 or SC-3.

The highest concentrations of cadmium, copper, and zinc occurred in sample SC-3-1A, collected adjacent to the North bank (Figures 23, 24, and 25). Lower concentrations occurred at stations downstream of SC-3. There was some indication of an effect on copper concentrations at SC-4-1A, where total copper exceeded the MWQSOG Tier II chronic exposure objective, unlike at SC-4-2A or in any of the samples from SC-5 or SC-6, upstream of SC-4.

Previous investigations documented the occurrence of elevated metal concentrations at SC-2 and SC-3 as well but, in the absence of the detailed cross-section sampling, all studies focused on the East Mine Workings, located south of the creek, as the potential source. The cross-section sampling data don't entirely exclude the East Mine Workings as the potential source – groundwater flow from the area of the mine workings could still report to the creek along the north bank – but these findings indicate that any investigation of the metal source will need to include investigations along both sides of the creek, as well as within the creek channel, rather than focussing solely on the south side.

The Sherridon mineral deposit is known to run beneath Sherlett Creek in the general vicinity of Stations SC-2 and SC-3, but it is not known if any mineralization daylights in the creek channel or on the north bank nor are the groundwater flow characteristics through or around the deposit well understood. Groundwater investigations to date have not been able to draw a clear connection between groundwater flows from the south side of the creek and metal concentrations in the creek during low flows (Tetra Tech 2022 in prep).

There was no clear indication that runoff from the south side of the creek or the groundwater seep from bedrock on the south shore observed in 2018 (DJRC 2019), was adversely affecting water quality along the South bank on August 22. Cadmium and zinc concentrations were well below the applicable MWQSOG objectives adjacent to the South bank at both SC-2 and SC-3, and the copper concentration was lowest adjacent the South bank. Metal concentrations along the south bank were generally higher than upstream at stations SC-5 and SC-6, and the groundwater seep could potentially account for the comparatively minor increases in metal concentrations evident along the South bank at SC-2 and SC-3, but these also could represent the residual influence of the influx along the North bank.

The cross-section sampling findings indicate that a single sample at SC-1 could adequately characterize water quality at that location, at least during the low flow conditions sampled on August 22. Concentrations of cadmium, copper, and zinc were the same, within analytical precision, at the two locations sampled (Figures 23, 24, and 25). This is an important finding, given that SC-1 has been established as the upstream reference location against which performance of the Sherridon Reclamation Project will be assessed going forward.

The considerable range in metal concentrations across the stream channel at SC-2 and SC-3 means that a single sample is not adequate to quantify temporal trends in water quality at either station. Metal concentrations decreased by a factor of 5 to 10 from north to south across the stream channel. The incomplete mixing across the channel at both locations largely explains the conundrum of apparently decreasing concentrations of cadmium, copper, and zinc in passing from SC-3 to SC-2, to SC-1 in the absence of any obvious dilution sources. The metals are not well-mixed across the channel at both SC-2 and SC-3, such that any single sample does not represent the cross-channel mean concentration whereas the channel is well-mixed at SC-1.

The cross-section samples at stations upstream of SC-1 indicate that considerably more investigation will be needed to more fully understand the cause of the elevated cadmium, copper, and zinc concentrations that develop around SC-3 during low-flow conditions. Much as the East Mine Workings attracted early attention as the likely cause, these workings are located south of Sherlett Creek, and a very unusual groundwater flow path is necessary to have contaminated groundwater enter the north side of the creek from a source on the south side. The August 22 results indicate the answer is much less straightforward than previously thought.

Construction of the sewage treatment plant (STP) north of Sherlett Creek (Figure 20) and the associated outfall to Sherlett Creek may have created a groundwater flow path to the creek. The

outfall enters Sherlett Creek immediately downstream of SC-4. This is not to suggest that the STP is the source of all the metal contamination to the creek, although the plant discharge may represent a source of aluminum originating from the alum coagulant that is typically used in STPs. The outfall pipe was installed in a trench cut from the plant to the stream bank, and the trench was backfilled with granular material, potentially intercepting groundwater and creating a pathway to carry that groundwater to the creek. This should be investigated, and if found to be occurring can be mitigated by the installation of "trench breakers" that prevent the trench backfill from functioning as a groundwater conduit. The STP discharge as a source of aluminum also needs to be investigated.

Another factor to consider in evaluating potential sources of the contamination to Sherlett Creek is that the Sherridon mineral deposit crosses Sherlett Creek in the vicinity of SC-3. The mine workings are not known to pass under the creek, but the mineralisation does, representing another potential source of the metal contamination to the creek that has existed for millennia and needs to be investigated.

September 1

A cross-section was sampled at SC-1 on September 1, involving 5 samples taken at equidistant intervals across the channel, to verify the findings of the August 22 cross-section sampling at SC-1 based on 2 samples. Analytical results for the key metal parameters are listed in Table 7. These samples further confirmed the August 22 finding that a single sample adequately characterises water quality at SC-1; there was negligible variation among the five samples for any of the key metal parameters.

Total cadmium exceeded the MWQSOG Tier II chronic exposure objective and both total copper and total zinc exceeded the applicable Tier II acute exposure objectives. Total iron exceeded the Tier III guideline.

Table 7. Total metal concentrations (mg/L) along a 5 sample transect across Sherlett Creek at SC-1; 1 September 2021.Station SC-1-1A was adjacent to the north bank and SC-1-5A was adjacent to the south bank. Values in bold face exceed the applicable MWQSOG Tier II chronic exposure objectives, or Tier II guideline (Fe, 0.30 mg/L) and in italics exceed the applicable Tier II acute exposure objectives.

Parameter	SC-1-1A	SC-1-2A	SC-1-3A	SC-1-4A	SC-1-5A
Aluminum	0.081	0.071	0.076	0.074	0.082
Cadmium	**0.00019**	**0.00019**	**0.00020**	**0.00018**	**0.00019**
Copper	***0.0071***	***0.0068***	***0.0071***	***0.0065***	***0.0071***
Iron	**0.39**	**0.37**	**0.37**	**0.36**	**0.38**
Zinc	***0.080***	***0.078***	***0.080***	***0.078***	***0.084***

5 September 2021

Stations SC-1 through SC-6 were sampled on September 5. As previously observed, elevated cadmium, copper, and zinc concentrations occurred at SC-3, SC-2, and SC-1 (Figure 26).

20–21 September 2021

Stations SC-1 through SC-6 were sampled on September 20-21. As previously observed on July 18 and 26, on August 9 and 22, and on September 5, elevated metal concentrations occurred at SC-3, SC-2, and SC-1 (Figure 27). Elevated copper and zinc concentrations also appeared at SC-4 on September 20-21. This was the first occurrence of elevated zinc at SC-4 in 2021 and the second of elevated copper, following the initial observation of elevated copper adjacent to the North stream bank on August 22 (Figure 24).

Late season increases in total aluminum and iron concentrations developed at all of SC-1, SC-2, SC-3, SC-4, and SC-5 (Figure 27). The highest concentrations of both iron and aluminum occurred at SC-5, suggesting a different source for these metals than for the cadmium, copper, and zinc that enter the stream around SC-3.

The detailed cross-section sampling completed at all 6 locations on August 22 demonstrated that metal concentrations at SC-2, SC-3, and SC-4 varied considerably across the stream channel, with the highest concentrations adjacent to the north shoreline, and the lowest adjacent to the south shoreline. With incomplete mixing across the channel at these stations, the sampling results are strongly influenced by the specific location of any single sample. Although the highest concentrations of cadmium, copper, and zinc occurred in the single sample at SC-2 on September 21, this should not be taken as an indication of where the overall highest concentrations occurred in this reach on that date. That said, the elevated iron and aluminum concentrations were not evident at any of the stations on August 22, which indicates the higher concentrations found a month later are real although it is not possible to state conclusively at which station(s) the highest concentrations occurred.

21 October 2021

Stations SC-1 and SC-6 were sampled on October 21, the last sampling date of the 2021 open water season (Figure 28). No samples were collected at any of SC-2 through SC-5 due to a shortage of sample bottles.

The results from these locations are consistent with the findings of the previous detailed sampling events in 2021, indicating cadmium, copper, and zinc contamination is entering Sherlett Creek in the reach between SC-6, at Sherlett lake, and SC-1. The elevated iron and aluminum concentrations that appeared at stations SC-1 through SC-5 on the September 20-21 survey persisted to October 21 at both SC-1 and SC-6. Neither cadmium nor zinc was elevated at SC-6, but elevated copper occurred, suggesting that the copper, iron, and aluminum at SC-6 may originate from a different source than at the downstream stations.

1 February 2022

Stations SC-1, SC-3, SC-5, and SC-6 were sampled on 1 February 2022. Stations SC-2 and SC-4 were not accessible due to poor, unsafe, ice conditions. The low flow condition that prevailed in autumn 2021 continued into mid-winter with no discharge passing to lower Sherlett Creek and no discharge from Camp Lake.

None of the key metal parameters exceeded the applicable MWQSOGs at SC-5 or SC-6. Cadmium, copper, zinc, and aluminum concentrations were higher at SC-1 than at SC-5 or SC-6 and copper exceeded the Tier II chronic exposure objective at SC-1 (Figure 28). Total cadmium exceeded the Tier II chronic exposure objective at SC-3 and both total copper and zinc exceeded the applicable MWQSOG Tier II acute exposure objectives at SC-3. Both aluminum and iron exceeded the respective Tier III guidelines at SC-3 but not at any other stations.

3.2.3 Sherlett Creek – Summary to Date

Water quality monitoring on the reach of Sherlett Creek downstream of Sherlett Lake has demonstrated the following:

- Over the past 5 years, total cadmium, copper, and zinc concentrations at SC-1 generally exceeded one or both of the applicable MWQSOG Tier II chronic and acute objectives for protection of aquatic life most of the time during the open water season. This occurred regardless of the precipitation or local runoff conditions, indicating that surface runoff is not primarily responsible.

- The lowest total cadmium, copper, and zinc concentrations at SC-1 occurred in winter, indicating frozen conditions limit the inflow of water carrying cadmium, copper, and zinc.

- Total cadmium, copper, and zinc concentrations at stations SC-3, SC-2, and SC-1 were higher than at stations SC-4, SC-5, and SC-6 on all open water sampling dates when compared in 2021.

- Total cadmium, copper, and zinc concentrations at SC-1 were below the applicable MWQSOG Tier II chronic exposure objectives on February 1 but were still 2 to 10 times higher than at SC-6, upstream.

- The consistent occurrence of higher cadmium, copper, and zinc concentrations at and downstream of SC-3 is indicative of a source entering the creek between SC-4 and SC-3.

- The creek passes adjacent to the former East Mine Workings, located south of the creek, between stations SC-4 and SC-2, suggesting the workings may be the source, or at least a source of the metal contamination.

- The creek also passes over the Sherridon mineral deposit through this same reach; direct contact with the mineralisation, or groundwater flow from the vicinity of the deposit, may also be a source.

- The outfall of the sewage treatment plant discharges to the north side of the creek downstream of SC-4. The treated sewage is unlikely to be a significant contributor of cadmium, copper, or zinc but the granular backfill in the trench may have created a preferential flow path for contaminated groundwater to enter the creek. Given the project setting, and the historical use of mine waste as granular construction material, the trench backfill itself may be a source of metal contamination. The plant discharge also should be assessed as a contributing factor; for example, residual aluminum originating from alum flocculant may contribute to the aluminum load in the creek.

- Surface runoff appears to be a minor contributor of metal contamination to the creek. This is indicated by the absence of a large spring pulse of metal contamination during spring runoff, by the very short-term metal peaks that follow heavy rainfall events, and by the occurrence of higher metal concentrations at SC-1, SC-2, and SC-3 in the effective absence of surface runoff, as occurred in summer/fall 2021.

- Multi-sample transects across the creek on 22 August 2021 found the highest concentrations of cadmium, copper, and zinc adjacent to the North bank of the creek at SC-2 and SC-3, with concentrations declining from north to south across the creek by factors of 3 to 10, indicating there is a source of the metals entering the creek at or near the North bank between SC-4 and SC-3. This finding does not rule out the East Mine Workings as a source but, if the workings are responsible, the flow path remains to be defined. Cross-section sampling should be repeated to confirm this finding.

- Short-term spikes in cadmium, copper, and zinc concentrations occur in direct response to heavy rainfall events, indicating surface runoff is responsible for delivering the metals to the creek during these events.

- Considerable increases of cadmium and zinc, and lesser increases of copper, develop during extreme low flow periods, generally in the absence of local surface runoff to the creek.

- Considering all the above evidence, the primary source of metal contamination to Sherlett Creek appears to be a sub-surface source that enters the creek downstream of station SC-4. This could be an inflow of metal-contaminated groundwater or direct contact of the creek with the mineralized zone, which passes directly beneath the creek in this location.

- A single, mid-channel sample adequately characterises water quality at SC-1. A single sample is not adequate at either SC-2 or SC-3 because of the substantial north-south variation in concentrations across the channel at these stations.

3.2.4 Implications for Downstream Water Uses

Sherlett Creek flow is split downstream of SC-1, with some flow passing into the diversion channel and then into Portage Lake and on into Cold Lake adjacent to the community (Figure 2). Most Sherlett Creek flow (85% on an annual average) passes through Camp Lake and discharges to Cold Lake over the north weir.

Local uses of lower Sherlett Creek primarily involve fishing and related contact recreational water uses. Uses of Cold Lake in the vicinity of the Community include fishing, swimming, and households that aren't connected to the municipal water system draw their water supply directly from Cold Lake. The municipal water supply is drawn from Sherlett Lake, which is upstream of SC-6.

The metals in Sherlett Creek, at the concentrations measured in 2021, are not an issue of concern for contact water uses, like swimming or fishing, in any of Sherlett Creek, Portage Lake, or Cold Lake. Health Canada does not consider inorganic substances (like metals) to be a significant concern for the health of swimmers. Parameter concentrations in natural surface waters are typically well below values of concern related to skin exposure or ingestion. Consequently, the Guidelines for Canadian Recreational Water Quality (Health Canada 2012) do not include numerical values for inorganic parameters, with the exception of pH, which has a wide guideline range of pH 5.0 to 9.0.

The greatest exposure for a swimmer to metals is through incidental consumption of water, and that exposure is considerably lower than for a person who relies on that same raw/untreated water supply for drinking. The Guidelines for Canadian Drinking Water Quality (Health Canada, 2020) therefore provide a very conservative measure of the suitability of local waters for swimming related to inorganic parameters. These guidelines are presented in Table 8 for the key water quality parameters. The Maximum Acceptable Concentrations of copper and cadmium are substantially higher than the highest concentrations measured in Sherlett Creek in 2021 (Figures 17 and 18). These local waters do not represent a concern for consumption or recreational use.

Aluminum and iron are not considered to be consumption-related health concerns, although iron can cause taste concerns. Zinc is an essential nutrient and is not a parameter of concern, although a concentration above 5.0 mg/L renders water unpalatable. Turbidity and TSS are aesthetic concerns for recreational use, although very turbid waters (which do not occur in Sherlett Creek or Cold Lake) can be a safety concern because these can obscure underwater hazards.

Figure 20. Sherlett Creek detailed sampling locations with pH (field), total cadmium (Cd), total copper (Cu), and total zinc (Zn) concentrations on 18 July 2021. Values in white are within MWQSOG Tier II objectives; values in yellow exceed the Tier II chronic exposure objectives; and, values in red exceed the Tier II acute exposure objectives.

Figure 21. Sherlett Creek detailed sampling locations with pH (field), total cadmium (Cd), total copper (Cu), and total zinc (Zn) concentrations on 26 July 2021. Values in white are within MWQSOG Tier II objectives; values in yellow exceed the Tier II chronic exposure objectives; and, values in red exceed the Tier II acute exposure objectives.

Figure 22. Sherlett Creek detailed sampling locations with total cadmium (Cd), total copper (Cu), and total zinc (Zn) concentrations on 9 August 2021. Values in white are within MWQSOG Tier II objectives; values in yellow exceed the Tier II chronic exposure objective; and, values in red exceed the Tier II acute exposure objective.

Figure 23. Sherlett Creek detailed cross-section samples, 22 August 2021 – total cadmium (mg/L). Samples with an "A" designation were collected from near surface. Samples with a "B" designation were collected from near bottom. Values in white are within MWQSOG criteria; values in yellow exceed the Tier II chronic exposure objective; and values in red exceed the Tier II acute exposure objective.

Figure 24. Sherlett Creek detailed cross-section samples, 22 August 2021 – total copper (mg/L). Samples with an "A" designation were collected from near surface. Samples with a "B" designation were collected from near bottom. Values in white are within MWQSOG criteria; values in yellow exceed the Tier II chronic exposure objective; and values in red exceed the Tier II acute exposure objective.

Figure 25. Sherlett Creek detailed cross-section samples, 22 August 2021 – total zinc (mg/L). Samples with an "A" designation were collected from near surface. Samples with a "B" designation were collected from near bottom. Values in white are within MWQSOG criteria; values in yellow exceed the Tier II chronic exposure objective; and values in red exceed the Tier II acute exposure objective.

Figure 26. Sherlett Creek detailed sampling locations with pH (field), total cadmium (Cd), total copper (Cu), and total zinc (Zn) concentrations on 5 Sep 2021. Values in white are within MWQSOG Tier II objectives; values in yellow exceed the Tier II chronic exposure objectives; and, values in red exceed the Tier II acute exposure objectives.

Figure 27. Sherlett Creek detailed sampling locations with pH (field), total cadmium (Cd), total copper (Cu), total zinc (Zn), total aluminum (Al), and total iron (Fe) concentrations on 20-21 September 2021. Values in white are within MWQSOG criteria; values in blue exceed the Tier III guidelines; values in yellow exceed the Tier II chronic exposure objectives; and values in red exceed the Tier II acute exposure objectives.

Figure 28. Sherlett Creek detailed sampling locations with pH (field), total cadmium (Cd), total copper (Cu), total zinc (Zn), total aluminum (Al), and total iron (Fe) concentrations on 21 October 2021. Values in white are within MWQSOG criteria; values in blue exceed the Tier III guidelines; values in yellow exceed the Tier II chronic exposure objectives; and values in red exceed the Tier II acute exposure objectives.

Figure 29. Sherlett Creek detailed sampling locations with pH (lab), total cadmium (Cd), total copper (Cu), total zinc (Zn), total aluminum (Al), and total iron (Fe) concentrations on 1 February 2022.Values in white are within MWQSOG criteria; values in blue exceed the Tier III guidelines; values in yellow exceed the Tier II chronic exposure objectives; and values in red exceed the Tier II acute exposure objectives.

Table 8. Canadian Drinking Water Quality Guidelines for untreated water sources (Health Canada; September 2020). NG indicates no guideline.

Parameter	Maximum Acceptable Concentration (mg/L)
TSS/Turbidity	NG
Aluminum	NG
Cadmium	0.007
Copper	2
Iron	NG
Zinc	NG

The primary consideration with respect to the safety of any local waters, not just those in Sherlett Creek or Cold Lake, for swimming is the microbiological water quality, which has not been monitored as part of the Sherridon Reclamation Project because it is not a project-related concern. Health Canada recommends that all surface waters used for drinking be disinfected (i.e., has the microbiological pathogens removed (e.g., by filtration) or killed (e.g., using chlorination or UV light)).

Based on the above, there are no concerns for recreational water uses in Cold Lake related to the chemical water quality in the lake or related to the quality of water entering the lake from Sherlett Creek. Microbiological water quality is not monitored as part of the project.

3.2.5 Implications for Camp Lake Water Quality

Water quality modelling conducted during project planning indicated that post-construction water quality in Camp Lake should largely be determined by water quality in the inflowing Sherlett Creek, beginning about four years following completion of construction (SENES 2008). The effect on Camp Lake water quality will vary depending largely on Sherlett Creek flows. At average flows, Sherlett Creek water quality will dominate, although total copper concentrations are expected to be slightly (5 to 10%) higher than in Sherlett Creek. Total copper concentrations in Sherlett Creek were at times as high or higher than along the main axis of Camp Lake in 2021 and may have contributed to the stalled decline of copper concentrations in Camp Lake at mid-summer.

The dominant effect of Sherlett Creek at average flows is, in part, a function of the relatively short lake residence time. At the estimated annual mean inflow of 17,000,000 m^3/year and lake volume of 1,890,000 m, the lake residence time is approximately 41 days.

At extreme low flows, Camp Lake should serve to attenuate the higher metal concentrations that develop in the creek during this flow condition. Instantaneous flows were measured near stations SC-1 and SC-6 on 19 October 2021. Stream velocity was measured in 20 panels across the channel at each location. The mean of the two flow estimates was 0.0192 m^3/s, or 1,655

m^3/day. At this flow, the residence time of Camp Lake would be approximately 1,141 days (3.1 years). The low flows that occurred in September and October 2021 couldn't significantly alter water quality in Camp Lake beyond a small area of the South basin near the inflow.

3.2.6 Implications for Aquatic Life

The prevalent cadmium, copper, and zinc concentrations, consistently exceeding the Tier II objectives in Sherlett Creek during the open water season are a direct concern for resident aquatic life in the creek. Fish are seasonal users of the creek, moving into the creek from Cold Lake in the spring freshet and then returning to the lake as freshet passes and before any very low flow conditions develop later in the summer. This is a typical pattern of local stream use by fish in northern Manitoba that likely has developed in part because of the uncertainty of flows being maintained throughout the open water season. Seasonal use of Sherlett Creek by fish also minimizes their exposure to metal concentrations in the creek and prevents their exposure to the even higher metal concentrations that can develop at low flows, as seen in 2021. The extent to which the seasonal and resident aquatic life in Sherlett Creek below Sherlett Lake may be affected by the metal concentrations in this reach has not been investigated.

3.3 Camp Lake and Discharge

An important factor to consider in understanding water quality in Camp Lake and its potential effect on water quality in Cold Lake is the magnitude of Sherlett Creek flow through the lake. The discharge flow from Camp Lake was negligible to zero in late August, September, and October 2021, reflecting the very low seasonal precipitation – only 70 mm of precipitation fell at Sherridon from July through September 2021 compared to a mean of 264 mm for the same period over the preceding 10 years (Section 3.1).

Flows on Sherlett Creek and at the Camp Lake discharge are not routinely measured, but photos of the discharge spillway clearly indicate negligible to no flows from late August through to the end of sampling in October and well into winter (Figure 7). In the absence of a material flow, the Camp Lake discharge could not affect water quality in Cold Lake in September and October 2021. Although this period of the absence of a discharge cannot be considered as representing background conditions, the monitoring results are nevertheless helpful to further understand water quality in Cold Lake in the absence of a discharge.

3.3.1 pH and Alkalinity

Camp Lake discharge field pH was consistently near neutral (neutral being pH 7.0) throughout 2021, and was above pH 6.5 at all times, closely tracking pH in Sherlett Creek (Figure 30a). Within this general trend of near neutral pH, field pH in both the Discharge and Sherlett Creek followed a very slight downward trend over the open water season. Lab pH was about 0.5 unit lower than field pH through the open water season (Figure 30b).

This was the second year that Camp Lake discharge pH did not substantially deviate from Sherlett Creek pH at any time in the open water season, and this also was true of Camp Lake

along the main axis of flow from Sherlett Creek to the discharge and in the East basin. In previous years, field pH in the East basin was generally lower than elsewhere in Camp Lake throughout the open water season – most of the remnant mine waste, and related construction activity, was adjacent to the East basin and acidic runoff from these areas contributed to lower pH in the East basin. By the beginning of the 2021 open water season, most of the mine waste had been removed and removal was completed by mid-September. Negligible rainfall and runoff following the spring runoff period substantially reduced the acid load from this remnant waste and the related construction activity.

Total alkalinity in Sherlett Creek and all stations in Camp Lake was highest under winter ice cover; at 34 to 40 mg $CaCO_3$/L in February 2021 (Figure 31). Alkalinity in Sherlett Creek dropped to the annual low of 22 mg/L in early June and progressively increased through the open water season, reaching a peak of 30 mg/L in the second half of August.

Alkalinity in Camp Lake also dropped during spring freshet, to an initial low of about 10 mg/L on June 1, then progressively increased to reach a seasonal maximum of 20 to 23 mg/L in early August. This is the inverse trend of metal concentrations during the same period and reflects the effects of metal and acid-contaminated spring runoff, causing the early-season decrease of alkalinity and increase in metals, with the continuing flow restoring alkalinity and reducing metals. The creek flow was more than adequate for alkalinity maintenance to early August, more than balancing any small residual sources of acid generation within the local watershed. However, by mid-August, Sherlett Creek flow was greatly diminished, becoming negligible by the end of the month, and the alkalinity load was no longer able to balance the residual acid load, leading to the declining alkalinity through to the end of the open water season.

As seen in the winters of 2019, 2020, and 2021, alkalinity was regenerated in Camp Lake under ice cover during winter 20221/2022, with increases of up to 19 mg $CaCO_3$/L developing between late October 2021 and 18 March 2022 (Figure 31). In the previous winters, alkalinity was replenished under ice cover both from the Sherlett Creek inflow and in lake processes. Only in-lake processes could be responsible in winter 2022, due to the absence of Sherlett Creek inflow.

An important source of alkalinity generation in aquatic systems is bacterial reduction of sulphate. As shown by studies at the Experimental Lakes Area, bacterial sulphate reduction can be the dominant source (i.e., as much as 85%) of alkalinity generation in a lake (e.g., Cook et al. 1986). Algal photosynthesis also can generate alkalinity from the consumption of nitrate (Goldman and Brewer 1980 and Schindler et al. 1985). Algal blooms often occur in shallow lakes under ice cover (e.g., Nebaeus 1984). Other sources can include alkalinity from calcium and magnesium increases due to carbonate mineral dissolution and from ammonia production from the decomposition of organic matter (Knull and Richards 1969; Berner et al. 1970; Einarsson and Stefansson 1983).

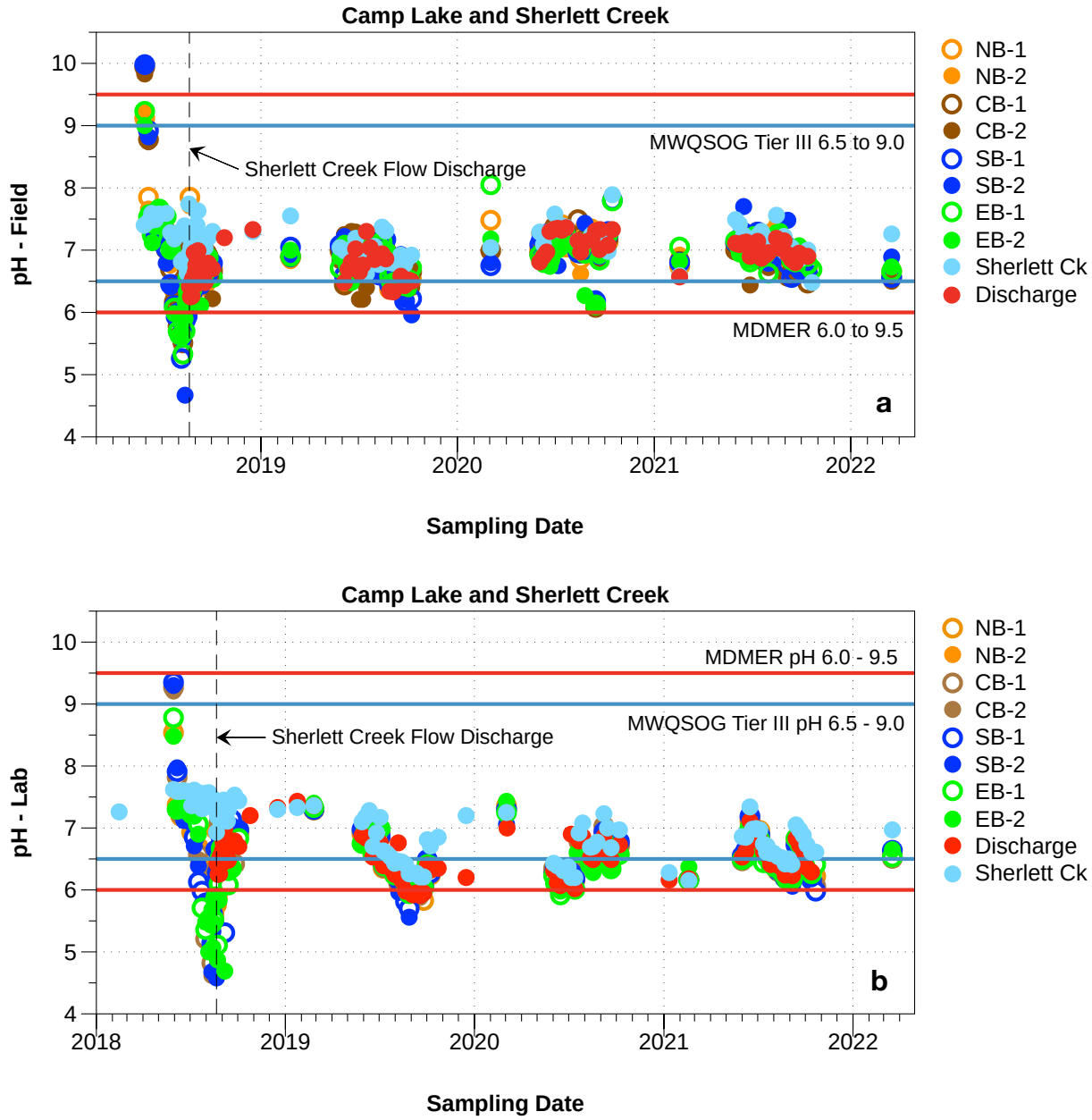

Figure 30. Field (a) and Lab (b) pH in Camp Lake, the Camp Lake discharge, and Sherlett Creek, 2018 to March 2022.

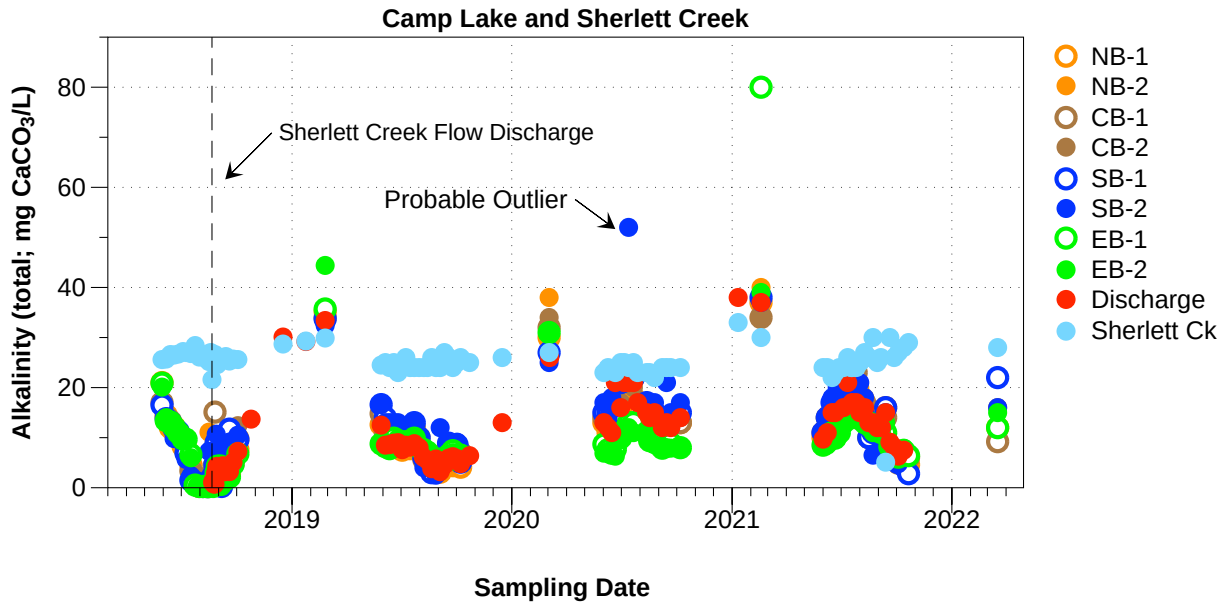

Figure 31. Total alkalinity in Camp Lake, the Camp Lake discharge, and Sherlett Creek, 2018 to March 2022.

Camp Lake discharge pH closely tracked the pH of Sherlett Creek in 2021, and any effect of the Camp Lake discharge on pH in the Cold Lake mixing zone, or beyond, was the same as the effect of Sherlett Creek alone, in the absence of Camp Lake. There was no effect of the Camp Lake discharge on pH within or beyond the Cold Lake mixing zone in 2022 (Figures 32 and 33).

Field pH at the mixing zone stations generally tracked discharge pH throughout 2021 (Figure 32a). This trend continued in the remainder of Cold Lake outside the mixing zone (Figure 33a). There were some departures from this trend at individual stations (e.g., pH at CL8 (sfc) was higher or lower than in the discharge on a number of occasions), but none of these can be attributed to the discharge.

Lab pH tended to be lower than field pH at all stations in Cold Lake (Figures 33 a and b), but this also was true in the discharge, Camp Lake and Sherlett Creek, and is related to sample handling and the length of time between collection and analysis, as noted above. Where available, field pH values are taken as being more representative of actual conditions. Although lower, the lab pH values nevertheless show the same trend of mixing zone pH tracking discharge pH through the open water period (Figures 32b and 33b). Given the trend was present at all locations, whether influenced by Camp Lake or not, it is not related to the reclamation project or the discharge from Camp Lake

The lower alkalinity in the Camp Lake discharge than in the Cold Lake mixing zone in 2019 had no effect on alkalinity at any station in Cold Lake (Figures 34 and 35).

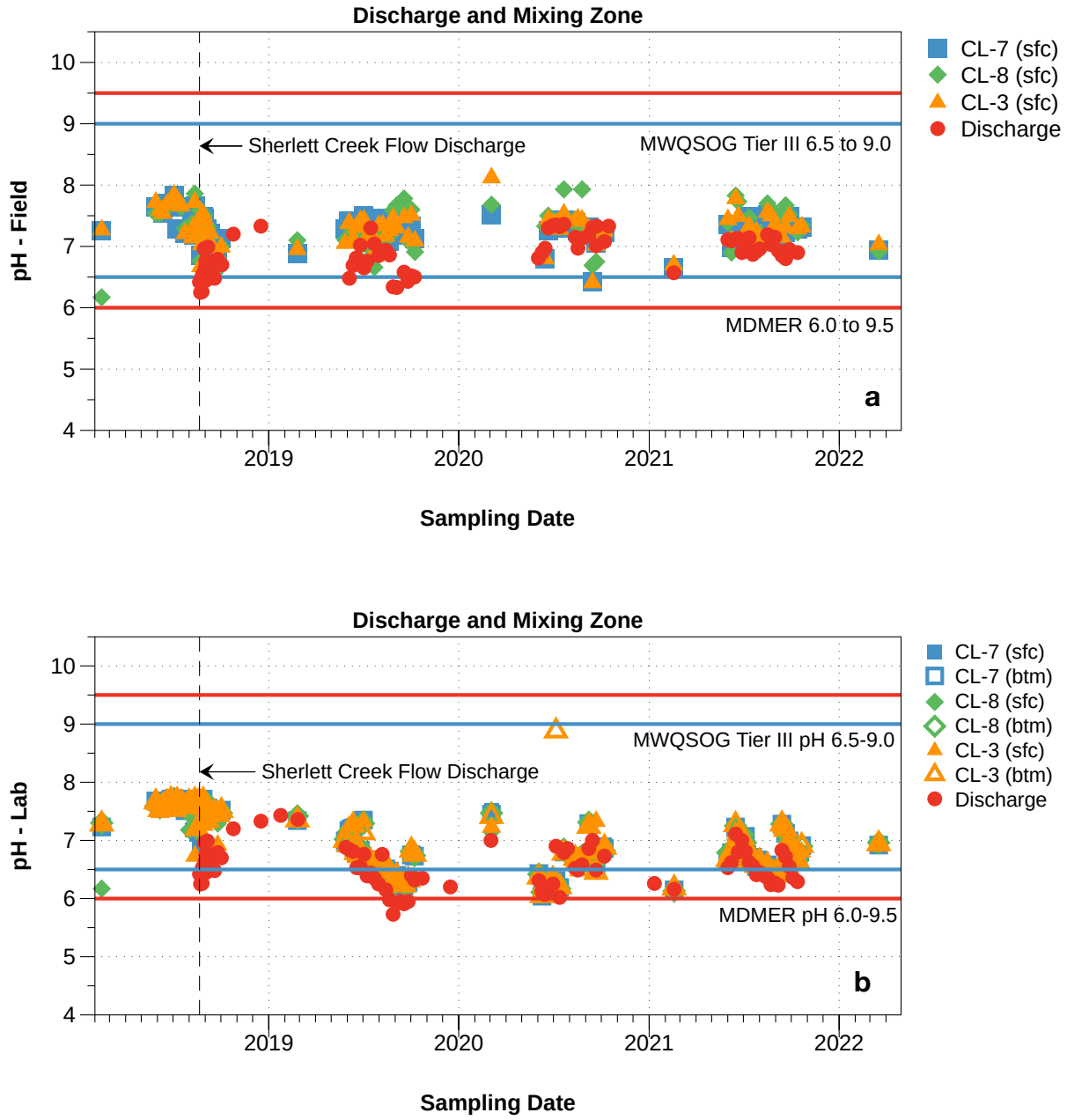

Figure 32. Field (a) and Lab (b) pH in the Camp Lake Discharge and Cold Lake Mixing Zone, 2018 to March 2022.

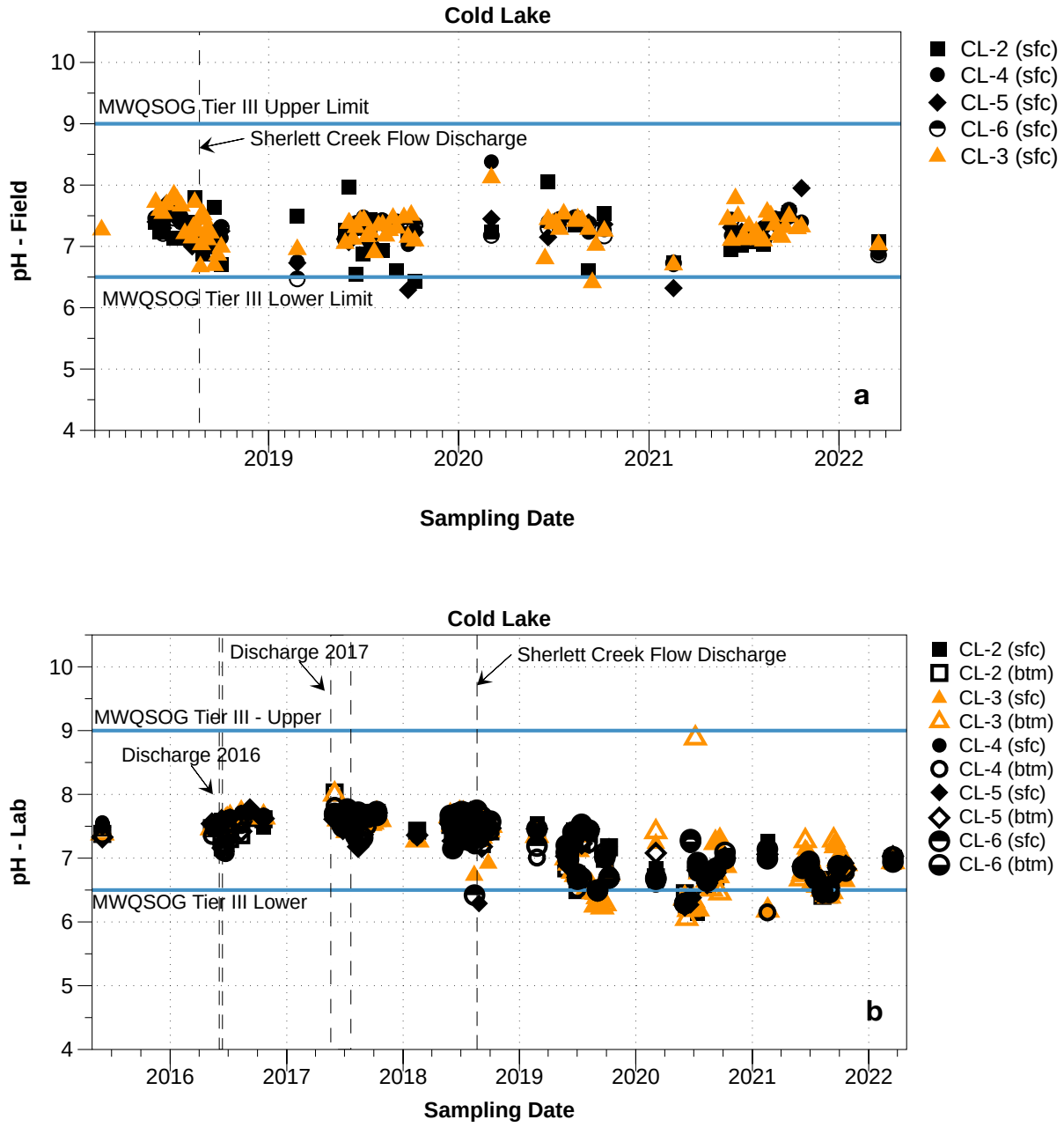

Figure 33. Field (a) and Lab (b) pH in the Cold Lake arm of Kississing Lake, May 2015 to March 2022.

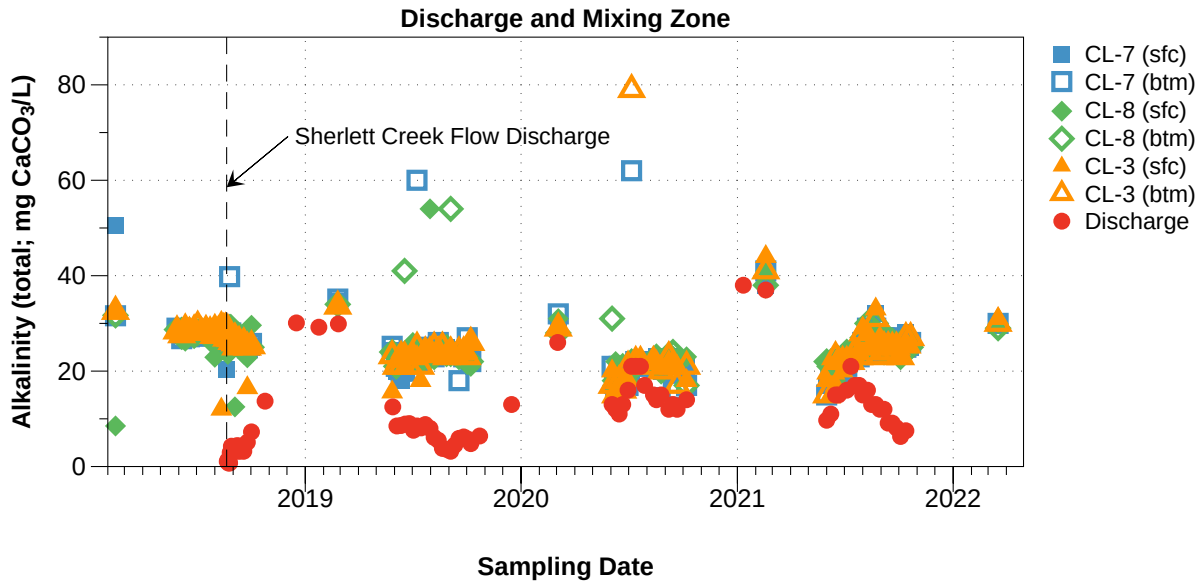

Figure 34. Total alkalinity in the Camp Lake Discharge and Cold Lake Mixing Zone, 2018 to March 2022.

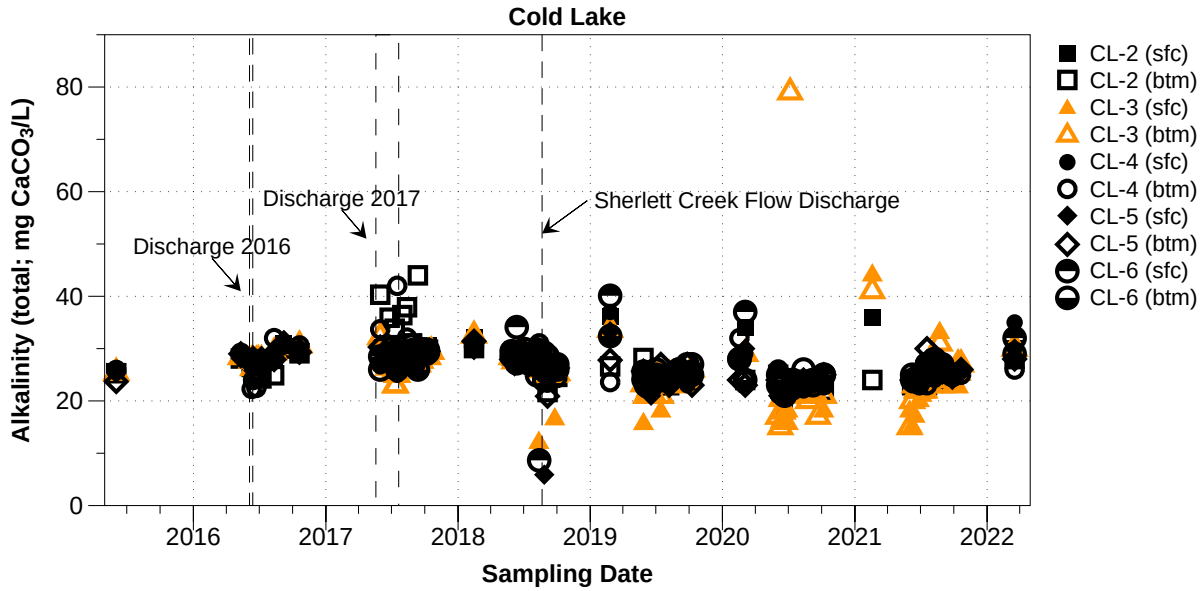

Figure 35. Total alkalinity in the Cold Lake arm of Kississing Lake, May 2015 to March 2022.

3.3.2 Sulphate

Sulphate (SO_4^{2-}) is a product of the weathering of sulphide minerals and the concentrations measured in the streams and lakes are generally indicative of sulphide mineralisation in the local watershed affecting water quality.

At the start of the open water season, sulphate concentrations along the main axis of Camp Lake and in the discharge were 50-60 mg/L, with concentrations decreasing to 30-50 mg/L by early July (Figure 36). Concentrations were relatively stable over the remainder of July, and then progressively increased through to the end of the open water season, reaching 140-170 mg/L on Oct 13-21. The period of decline corresponds to the spring runoff flushing period and the later period of increase corresponds to the period of low to negligible Sherlett Creek flows.

Sulphate concentrations in the East basin were about 30 mg/L higher than along the main lake axis through the end of July (Figure 36). This differential was maintained between the East and South/Central basins through to the end of the open water season, whereas the differential with the North basin/Discharge diminished through August and into September.

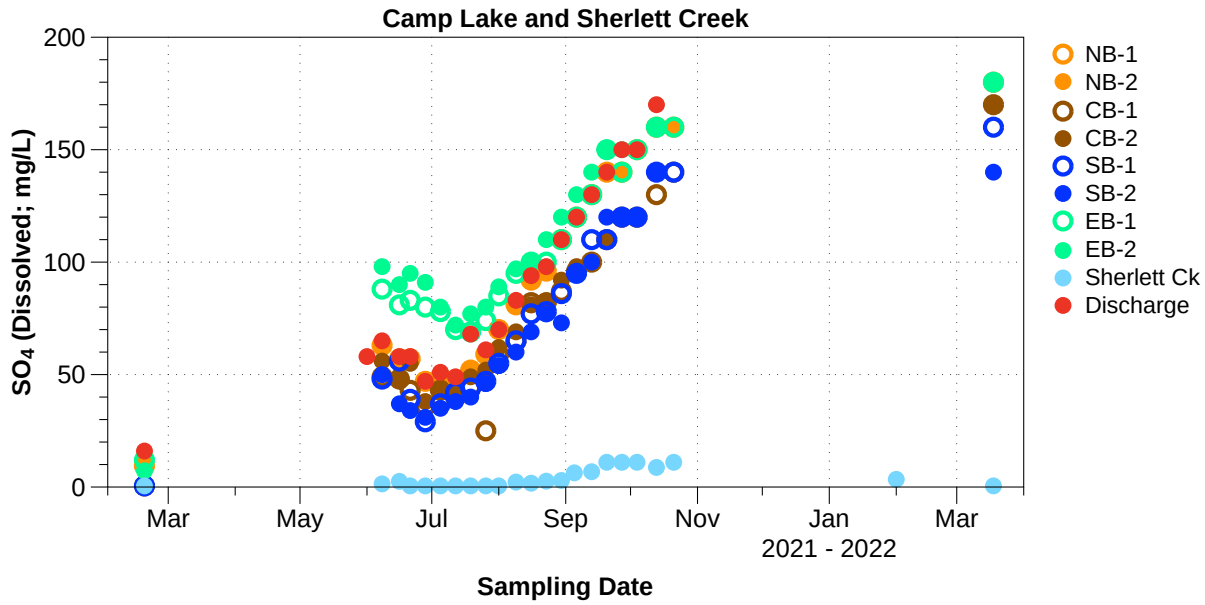

Figure 36. Dissolved sulphate (SO_4) in Camp Lake and Sherlett Creek, February 2021 to March 2022.

Sulphate concentrations under winter ice cover in Camp Lake differed considerably between 2021 and 2022 (Figure 36). Values were between <1 and 12 mg/L in February 2021 compared to 140 to 180 mg/L in March 2022. The primary difference between the years was the presence/ absence of a Sherlett Creek inflow – Sherlett Creek flowed continually through winter 2021 whereas there was no flow in Sherlett Creek from the end of August through to the March 2022 sampling date.

Sulphate concentrations in Camp Lake have decreased considerably as a result of the reclamation works. Prior to reclamation, in January 2008, the sulphate concentration in Camps Bay in the vicinity of station CB-2, was 2,050 mg/L and the sulphate concentration was 7,520 mg/L in Woods Lake (now part of the East basin) (SENES 2008).

Sulphate also is a water quality parameter of interest for the protection of aquatic life. Manitoba has not established any water quality criteria for sulphate, but British Columbia has established aquatic life criteria (Meays and Nordin 2013; Table 9). The Health Canada (2020) sulphate guideline for drinking water quality is 500 mg/L. Cold Lake hardness ranges from 38 to 60 mg/L (Appendix Tables B4 to B20), sulphate concentrations in the discharge were consistently below the applicable guideline of 218 mg/L throughout 2021 (Figure 36).

Table 9. British Columbia 30-day average sulphate water quality guidelines (mg/L) for protection of aquatic life based on water hardness (mg/L) categories. (from Meays and Nordin 2013).

Water Hardness (mg/L)	Sulphate Guideline (mg/L)
Very Soft (0-30)	128
Soft to Moderately Soft (31-75)	218
Moderately Soft/Hard to Hard (76-180)	309
Very Hard (181-250)	429
>250	Determined by site-specific toxicity testing

3.3.3 Organic Carbon

Total and dissolved carbon analyses (TOC and DOC) were added to the analytical protocol in 2021 to assist with understanding of factors affecting partitioning of metals between the dissolved and particulate phases and to provide a better understanding of metal availability. Dissolved metals can adsorb to dissolved organic matter and become less available – DOC is an important parameter of the Biotic Ligand Model, which is seeing increasing use in the development of water quality guidelines.

DOC concentrations in Camp Lake ranged between 8 and 14 mg/L over 2021. Values increased from ice-out to a summer peak in about mid-July, then gradually declined over the remainder of the open water season (Figure 37). Concentrations in the East basin were lower than in the rest of Camp Lake through to about the end of July, after which concentrations were similar in all basins through the remainder of the open water season. DOC concentrations in Sherlett Creek were generally higher than in Camp Lake throughout 2021, ranging from 12 to 18 mg/L.

Particulate organic carbon (Figure 38) is calculated by subtracting measured DOC from measured TOC. DOC dominated the organic carbon pool in both Camp Lake and Sherlett Creek, accounting for 71 to 100% of TOC. The very low DOC concentrations measured on July 7 in the discharge, NB-1, SB-1, and SC-1 are considered anomalous given concentrations at CB-1 and EB-1 were 11 to 13 mg/L on that date.

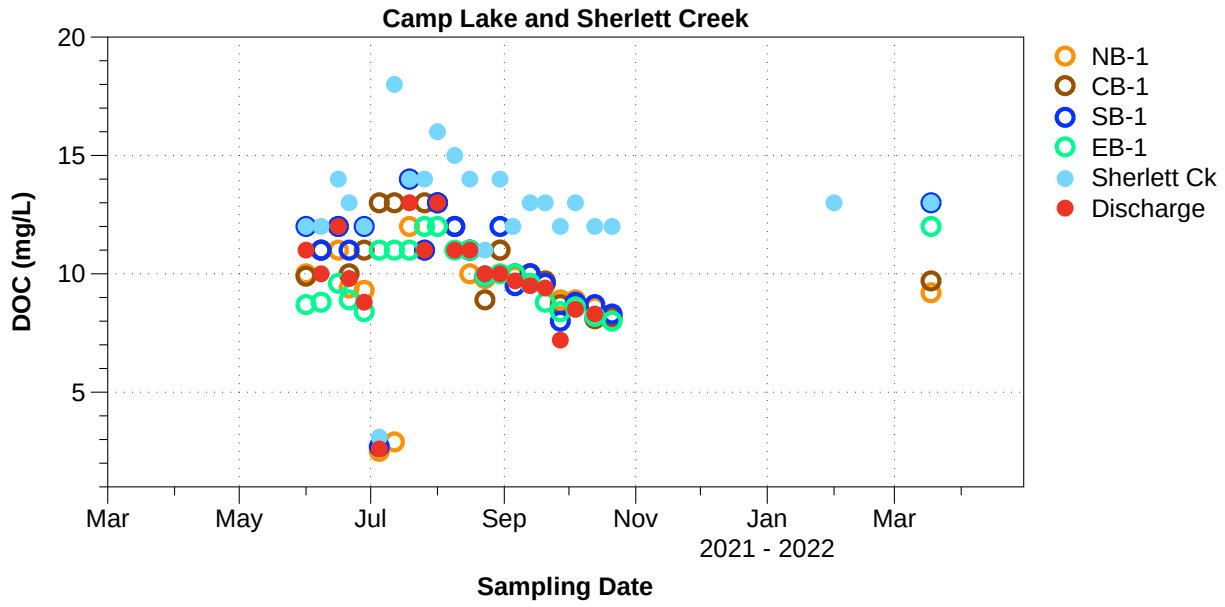

Figure 37. Dissolved organic carbon (DOC) concentrations (mg/L) in Camp Lake and Sherlett Creek, February 2021 to March 2022.

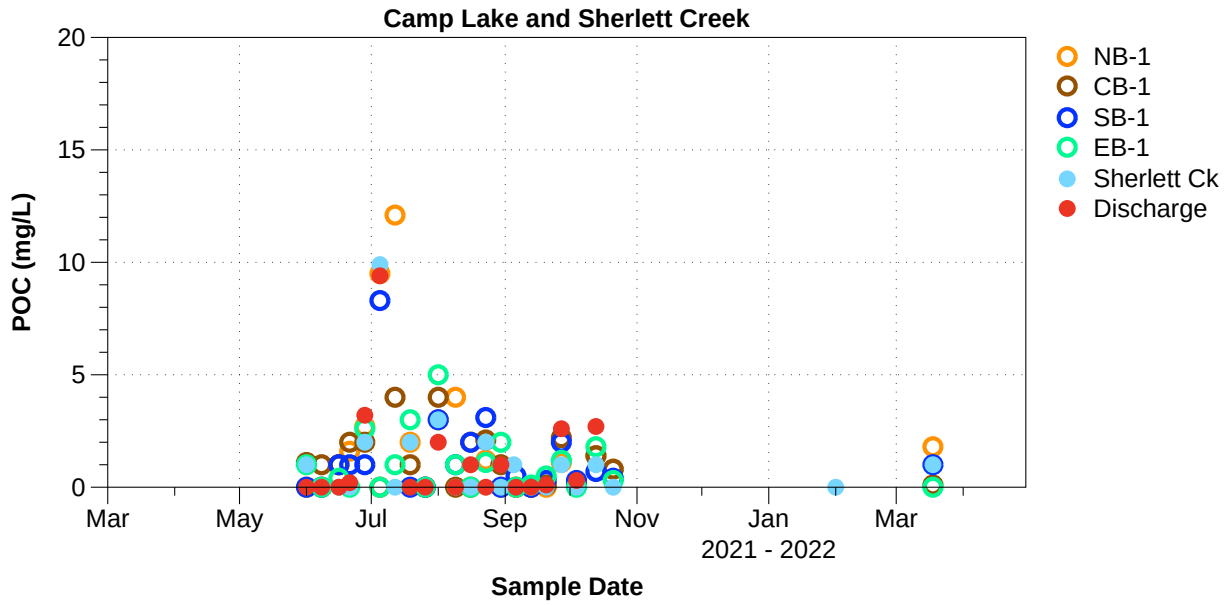

Figure 38. Particulate organic carbon (POC) concentrations (mg/L) in Camp Lake and Sherlett Creek, February 2021 to March 2022.

The DOC concentrations in Sherlett Creek and Camp Lake are in the range of the global median concentrations in eutrophic lakes (10.3 mg/L) and wetlands-marshes (15.3 mg/L) (Wetzel 2001) and are high enough to adsorb metals and affect partitioning.

3.3.4 Water Appearance – TSS, Turbidity, and Iron

The Community has expressed considerable concern regarding the effect of any discharge from Camp Lake on the appearance of water in the Cold Lake arm of Kississing Lake, with specific concerns regarding the potential for red staining of boats. Three of the parameters measured – TSS (total suspended solids), Turbidity, and Iron - have the potential to affect the appearance of water, with iron being a source of red staining.

In the years before Sherlett Creek was directed back through Camp Lake, lime treatment was used to manage water quality and water level on the lake. The lime treatment created a floc that settled on the lake bottom during calm periods, with the floc being resuspended in parts of the lake during strong and sustained north wind events. This periodic floc suspension was most evident in the South and Central basins of Camp Lake because this part of the lake has the greatest exposure to north winds (i.e., has the longest fetch) (DJRC 2019). The floc suspension created a red-coloured turbidity in the South and Central basins, because of the iron associated with the floc. Floc suspension was temporary, with the relatively heavy floc settling out once again after the wind subsided. Turbidity in Camp Lake and the associated red colour also diminished as the lake became acidic over the course of the open water season. The acidic conditions dissolved the floc and converted any particulate iron to the dissolved phase, resulting in very clear, albeit brown stained, water that was considered more visually appealing although it was unsuitable for discharge due to the low pH and high concentrations of metals.

The reclamation works had progressed to the point in 2018 that Sherlett Creek flow could be restored through Camp Lake and maintain sufficient alkalinity such that lime treatment would no longer be required. Sherlett Creek was directed back through Camp Lake in August 2018 and no lime treatment has been needed since. The lake no longer becomes acidic, ending the need for lime treatment and eliminating the formation of lime floc. Conditions in the lake since August 2018 are very different from those during the years of lime treatment. Now that the lake no longer becomes acidic, the effects of remnant mine waste adjacent to Camp Lake have become evident, leading to the targeted removals started in 2018, continued in 2020, and now completed in the 2021 construction season.

The remaining mine waste adjacent to Camp Lake represents a continuing source of dissolved and particulate iron, and therefore potentially of TSS and turbidity, to Camp Lake during the open water season. The potential for dissolved iron to convert to particulate iron is determined by water quality. In the absence of organic carbon, dissolved iron becomes particulate under the neutral pH conditions now present in Camp Lake. However, in the presence of organic carbon, dissolved iron can remain in the dissolved phase.

The 2021 monitoring data and further details are discussed in the following sections, by parameter.

3.3.4.1 TSS

TSS concentrations along the main axis of Camp Lake followed an L-shaped seasonal pattern, with the highest concentrations of the season (4.4. to 6.5 mg/L) occurring in early June followed by lower values through the remainder of the open water season (Figure 39). TSS concentrations in the East basin were higher than in the rest of the lake in early June (7.7 to 9.9 mg/L), but these also declined quickly over the next couple of weeks. By mid-July, TSS in the East basin was similar to the rest of the lake. A second smaller (3.7 to 5.5 mg/L) seasonal peak developed in the East basin around August 9-16, during active construction around the island in the East basin. The lowest TSS concentrations occurred under ice cover at all locations in Camp Lake. TSS concentrations in the Camp Lake discharge were typically below 5 mg/L, with the exception of 14 mg/L on October 13. This value is considered anomalous and likely would have been contaminated while attempting to collect a sample from the trickle over the weir.

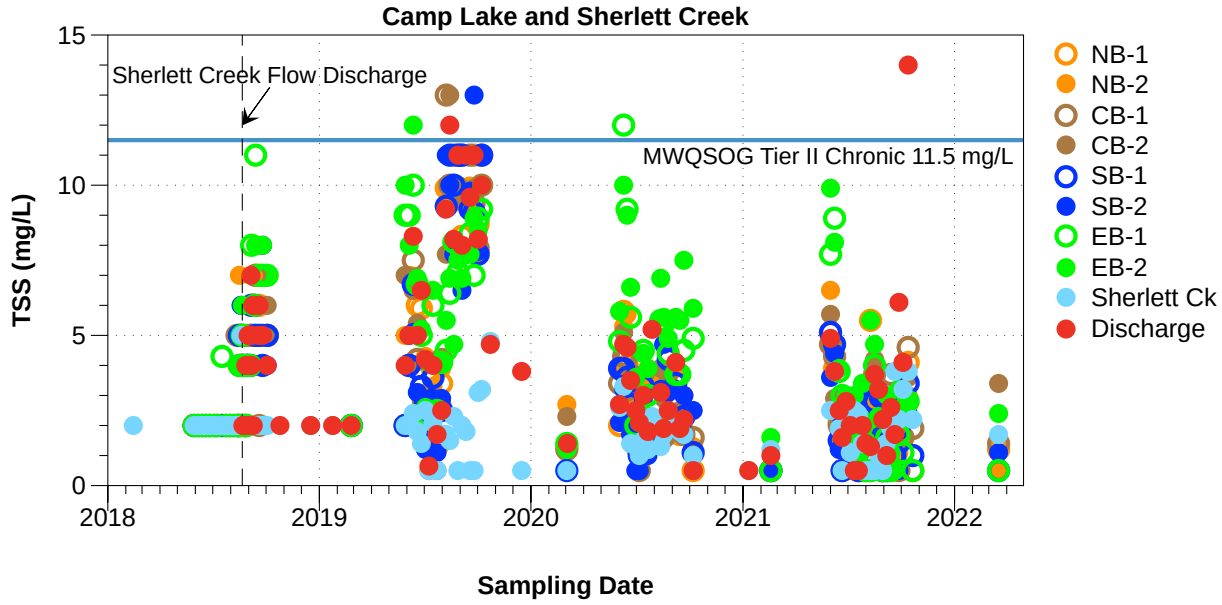

Figure 39. Total suspended solids concentrations in Camp Lake, the Camp Lake discharge, and Sherlett Creek, 2018 to March 2022. Note the detection limit was reduced from 4.0 mg/L in 2018 and earlier years to 1.0 mg/L in 2019 and later years. Values below the detection limit are plotted as equal to one-half the detection limit.

TSS concentrations in the Cold Lake mixing zone followed an L-shaped seasonal pattern similar to that along the main axis of Camp Lake, although the concentrations involved were slightly lower, typically ranging from <1 mg/L to about 4.0 mg/L and never exceeding 5.0 mg/L (Figure 40). The initial TSS peak in the mixing zone likely was driven by the Camp Lake discharge, as was the case in 2020, as a result of the high initial flows during spring runoff. TSS at the mixing zone stations remained well below the MWQSOG Tier II chronic exposure objective of 11.5 mg/L throughout 2021.

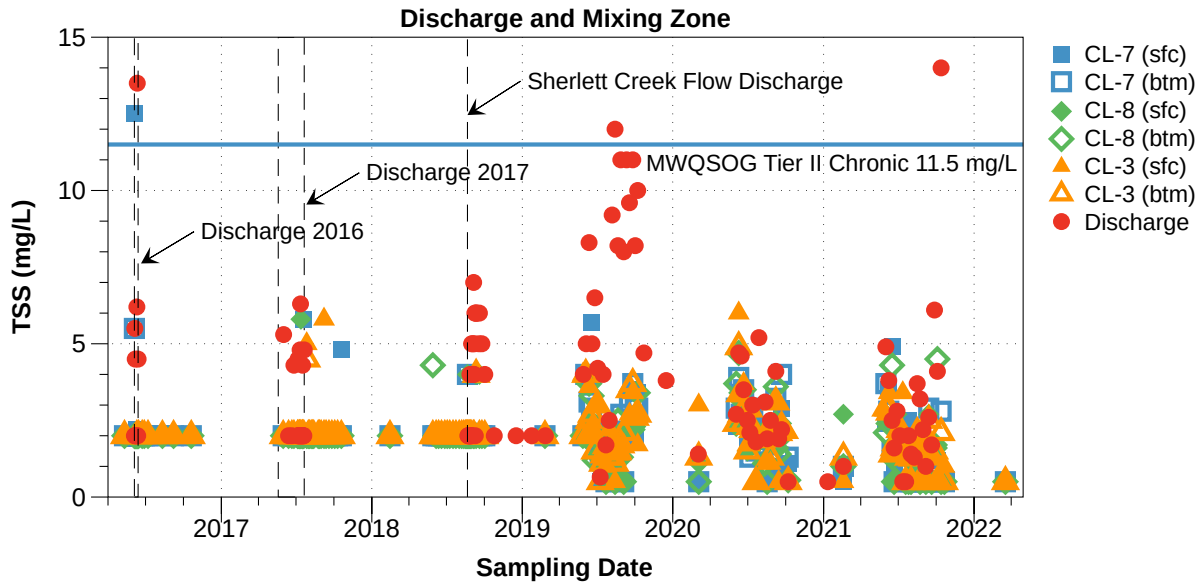

Figure 40. Total suspended solids concentrations in the Camp Lake Discharge and Cold Lake Mixing Zone, May 2016 to March 2022. Note the reduction in detection limit from 4.0 to 1.0 mg/L between 2018 and 2019.

TSS concentrations in Cold Lake beyond the mixing zone followed a similar L-shaped seasonal pattern of variation to that observed in the mixing zone, with concentrations not exceeding 4.0 mg/L (Figure 41). It is not known if a similar seasonal TSS pattern occurred in Cold Lake outside at the mixing zone before 2019 because of the 4 mg/L analytical detection limit previously employed and all of the seasonal variation in 2021 occurred at or below this limit. The Camp Lake discharge had no effect on TSS concentrations at any station in Cold Lake outside the mixing zone in 2021.

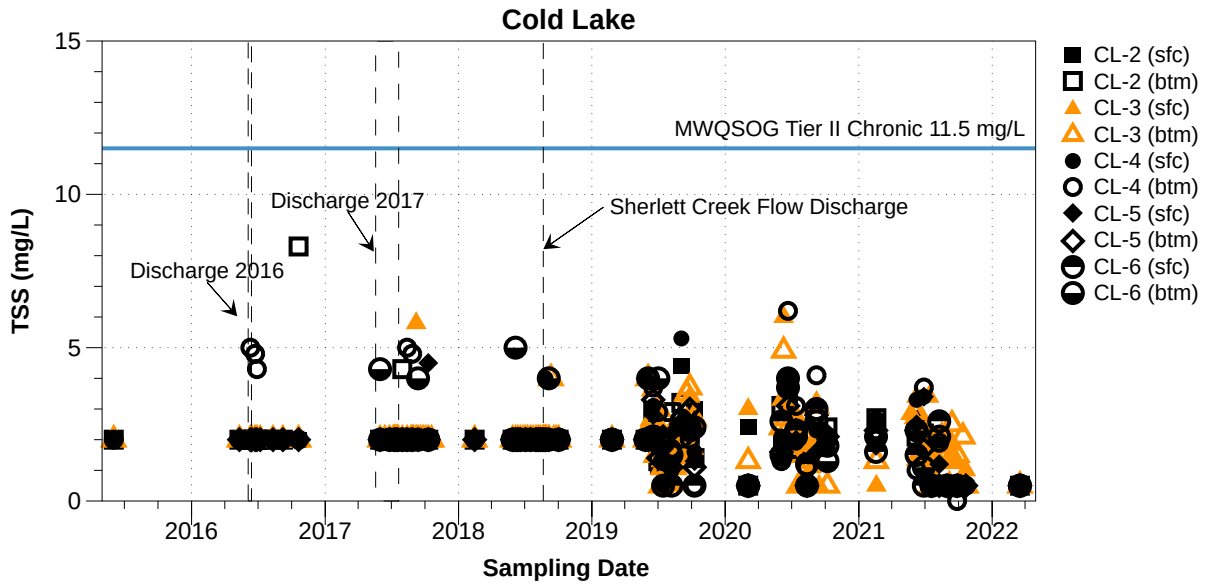

Figure 41. Total suspended solids concentrations in Cold Lake, May 2015 to March 2022. Note the reduction in detection limit from 4.0 to 1.0 mg/L between 2018 and 2019.

3.3.4.2 Turbidity

Turbidity is a measure of the optical properties of the water and increases with the amount of material in the water that can reflect or refract light – it is a measure of the "cloudiness" of the water. An increased quantity of material in the water, such as suspended sediment eroded from a shoreline or stirred up from a shallow lake bottom by the wind, will typically result in increased turbidity. Turbidity can also be affected if there is a change in the reflective properties of suspended material, such that a change in the suspended solids concentration will not always be related to a change in turbidity and there will also be circumstances in which turbidity will change in the absence of a change in the suspended solids concentration. Further, relatively small increases in the concentration of suspended material can cause a disproportionately larger increase in turbidity if that material is more reflective.

Turbidity in all parts of Camp Lake was very low under winter ice cover in February 2021 (<1 NTU at all locations except NB-1 (1.5 NTU)). Turbidity in all basins of Camp Lake in the 2021 open water season was the same as in 2020 through to early September, typically <10 NTU and never exceeding 16 NTU (Figure 42). Turbidity in all parts of the lake approximately doubled between mid-September and the end of the open water season – and this higher turbidity continued under ice cover through to at least 18 March 2022. The timing of this increase coincided with the period of negligible Sherlett Creek inflow.

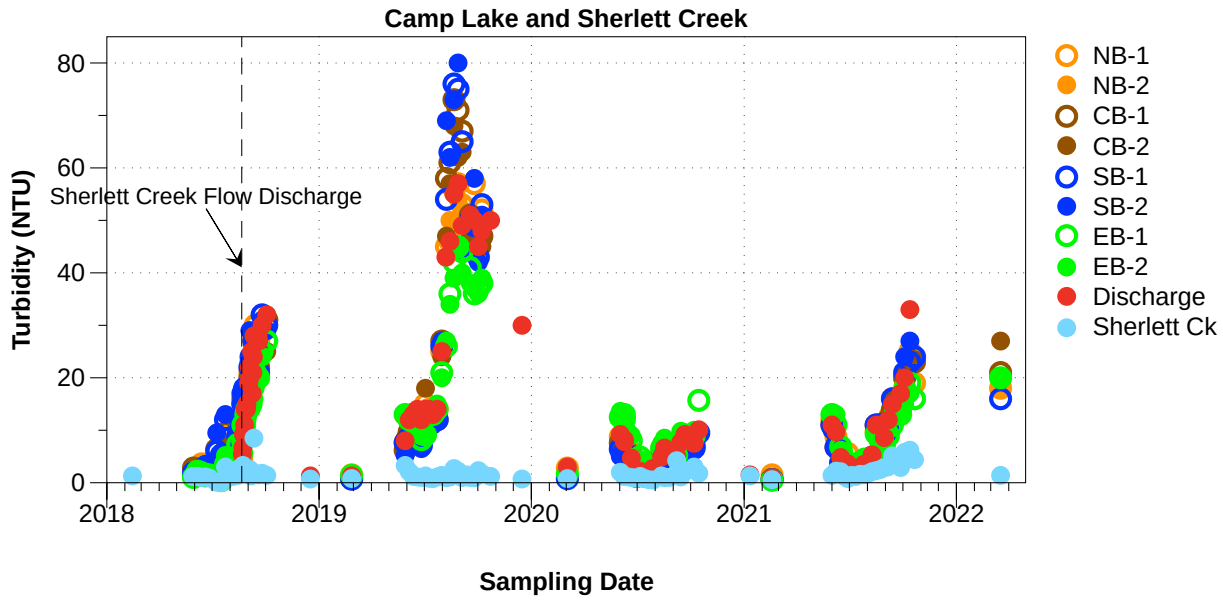

Figure 42. Turbidity (NTU) in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, 2018 to March 2022.

Concerns regarding effects of the Camp Lake discharge on the appearance of water in Cold Lake relate specifically to near-surface waters. The Camp Lake discharge had no effect on turbidity measured in the near-surface samples at any station in Cold Lake beyond the mixing zone (Figure 43). Near-surface turbidity was consistently below 5 NTU at CL2, CL4, CL5, and CL6. Within the mixing zone, turbidity was typically at or below 5 NTU with the exception of the June 2 and 9 samples, when values ranged between 3.5 and 8.1 NTU. The slightly higher values in the mixing zone in early June are attributable to the Camp Lake discharge, although these did not extend beyond the mixing zone.

The discharge also had no effect on near-bottom turbidity in the Cold Lake mixing zone (Figure 44). Near-bottom turbidity was, at times, considerably higher in individual samples, although the 31.8 NTU at CL2 (btm) on September 27 was appears to be a result of bottom disturbance.

The 2020 and 2021 turbidity monitoring results indicate the elevated turbidities in Camp Lake characteristic of the previous years have now substantially diminished, although they haven't been eliminated, and can be affected by the lack of inflow from Sherlett Creek.

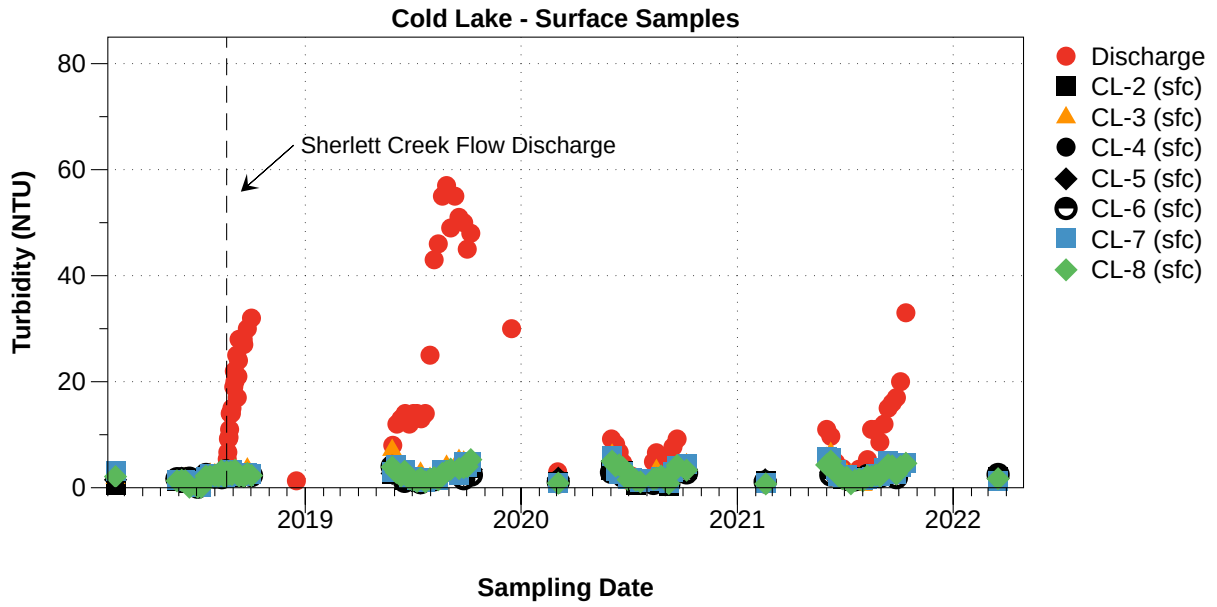

Figure 43. Turbidity (NTU) in the Camp Lake Discharge and in near-surface samples in the Cold Lake arm of Kississing Lake, 2018 to March 2022.

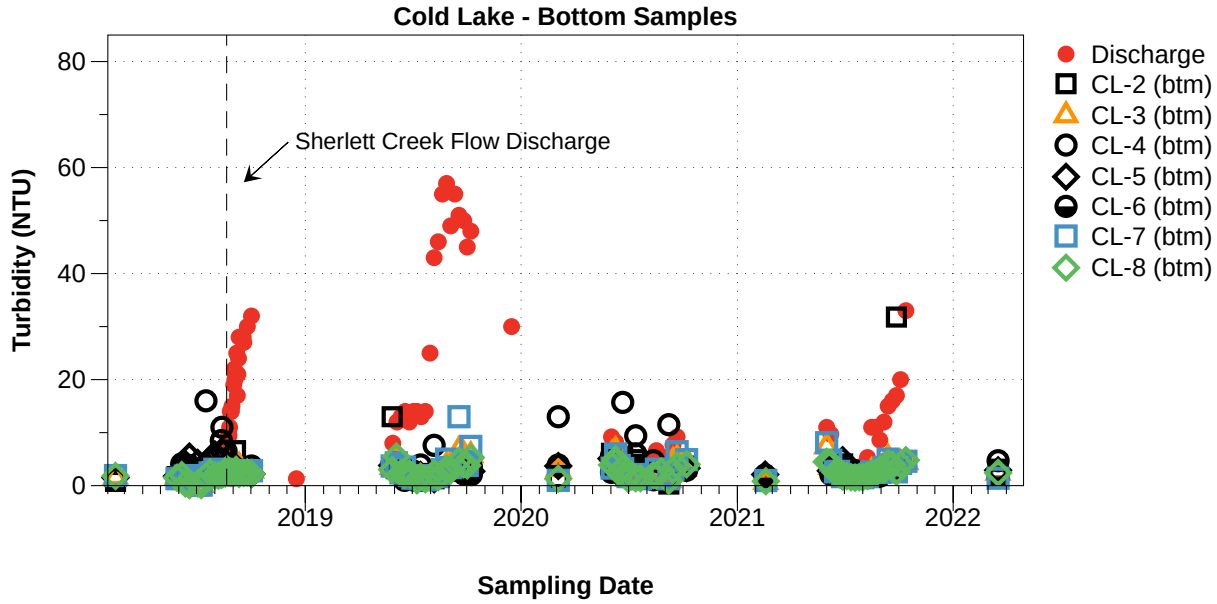

Figure 44. Turbidity (NTU) in the Camp Lake Discharge and in near-bottom samples in the Cold Lake arm of Kississing Lake, 2018 to March 2022.

3.3.4.3 Iron

Iron is a particular interest with respect to the appearance of water because it also is implicated in the red staining of boats. The staining was a regular occurrence through 2008, during the period of uncontrolled mine-influenced discharges through Camp Lake. The staining stopped from 2009 through 2017 and has since been regularly reported. The timing of the resumption of the boat staining coincided with the resumption of discharges from Camp Lake.

Total iron concentrations in Camp Lake varied considerably over the monitoring period, concentrations were low (0.21 to 0.38 mg/L) under ice cover during winter 2021 followed by a large peak that developed at the very beginning of the open water season (Figure 45). The timing and ultimate magnitude of this first peak are not known, because concentrations were already at or after the peak when sampling started at the beginning of June. Maximum observed concentrations during the first peak ranged from 6.5 mg/L at SB-2, to 8.0 mg/L at CB-2 and 7.5 mg/L in the discharge. Total iron concentrations declined quickly through June to reach the open water season minima in all parts of the lake in early to mid-July, reaching 1.4 to 1.7 mg/L in the South and Central basins, 1.6 to 1.8 mg/L in the North basin and discharge, and 1.7 mg/L in the East basin.

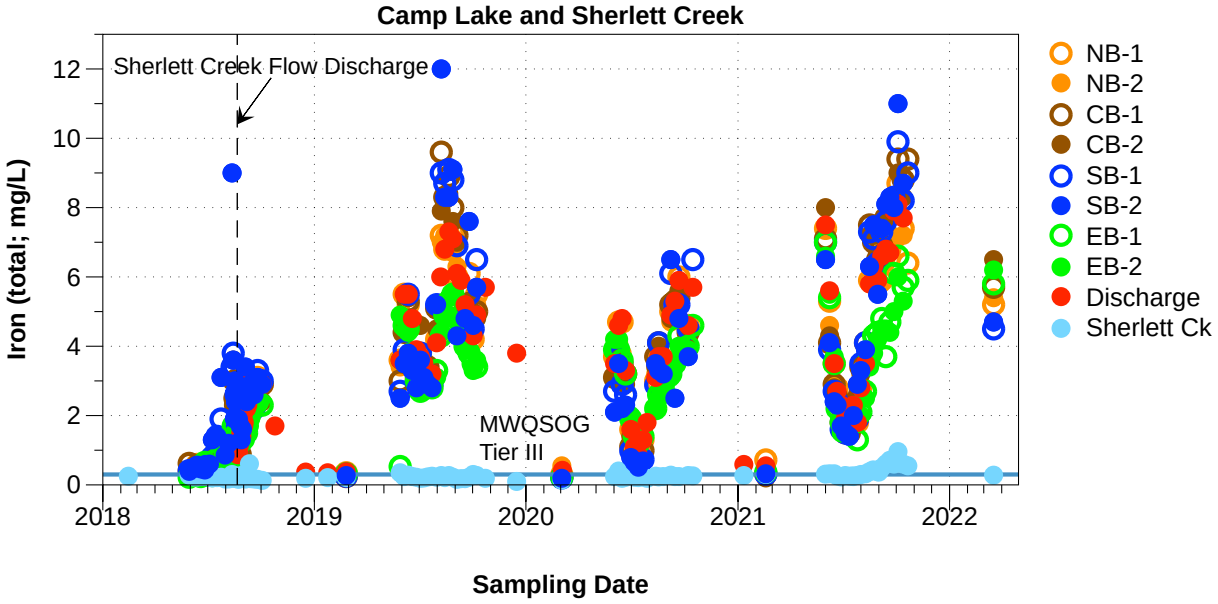

Figure 45. Total iron concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, 2018 to March 2022.

The second peak started to develop around the beginning of August, and total iron concentrations increased continually from then until around mid-October (Figure 45). The maximum concentrations during this second peak ranged from 6.0 mg/L (EB-2) to 11 mg/L (SB-2). Open water sampling ended before any substantive decreases occurred at any location. The substantial declines that occurred at all stations under ice cover in previous years, did not occur

in winter 2022. On 18 March 2022, total iron concentrations were still in the range of 4.5 mg/L (SB-1) to 6.5 mg/L (CB-2).

The two peaks in total iron concentrations over the 2021 open water season were the product of approximately equal increases in dissolved and particulate iron concentrations (Figures 46 and 47). Dissolved iron accounted for 60% (EB-2) to 76% (CB-1) of total iron in Camp Lake on average in 2021 and averaged 66% in the discharge (Appendix Tables B1 to B9). Overall, the dissolved fraction was not quite as large in 2021 as in 2020, when 83% of total iron in the discharge was in the dissolved fraction (DJRC 2021), but was still considerably higher than in 2019, when dissolved iron accounted for just 23% of total iron (DJRC 2020).

The rapidly declining first peak of total iron in the open water season is consistent with the rapid declines in other metals that occurred during the same period, with spring flushing identified as the likely mechanism of the decrease (Section 3.5 below). The second iron peak began developing in mid to late August after Sherlett Creek inflows had substantially diminished but was proportionately much larger than in any of the other metals, indicating a different and/or additional cause. Although total iron concentrations peaked at the end of October, this peak was the product of sequential peaks in dissolved and particulate iron. Dissolved iron increased first in all basins, with peak concentrations occurring around the end of September and then rapidly declining to the end of the open water season (Figure 46). The particulate iron peak developed as dissolved iron concentrations were declining (Figure 47), indicating this was the product of a shift in partitioning rather than a continuing source to the lake. The net result of these sequential peaks in the iron fractions was the total iron peak occurring at the end of the open water season. The principal iron sources to the lake during this second peak included construction activity to remove mine waste adjacent to the East basin; construction works to remove the access road, generating runoff that would report to the South basin; and diffuse residual sources within the local watershed or the lake. Construction activity adjacent to the South basin in previous years (DJRC 2019) also appeared to have a specific effect on iron concentrations that was attributed to the weathered nature of the waste rock material in the access road embankment compared to the much less-weathered tailings waste that predominated adjacent to the East basin.

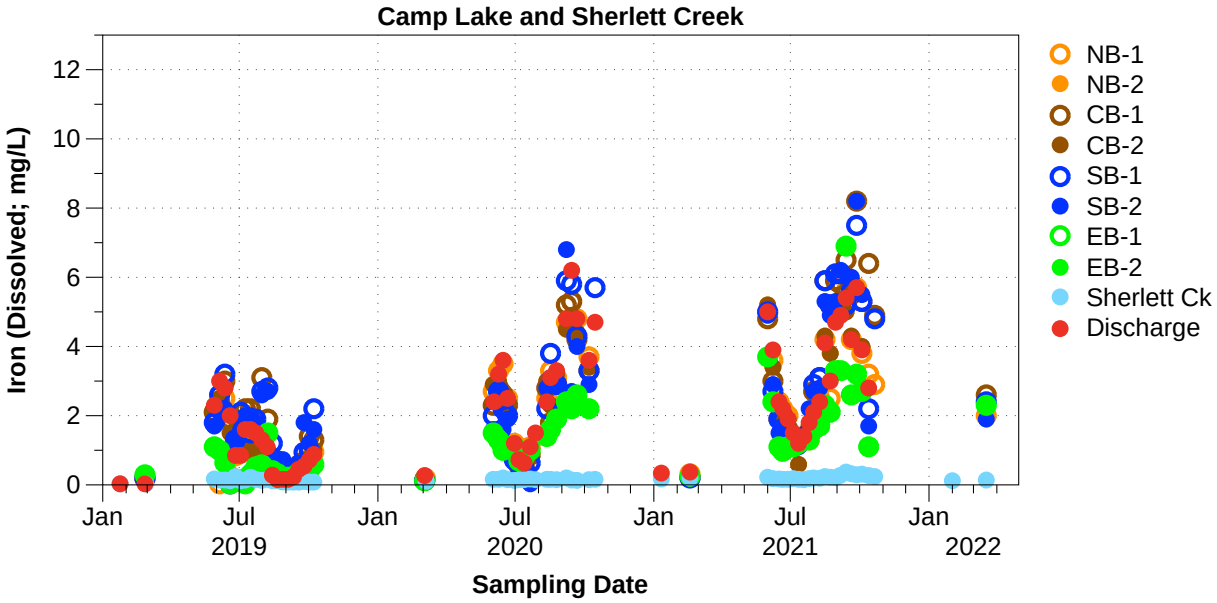

Figure 46. Dissolved iron concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, 2019 to March 2022.

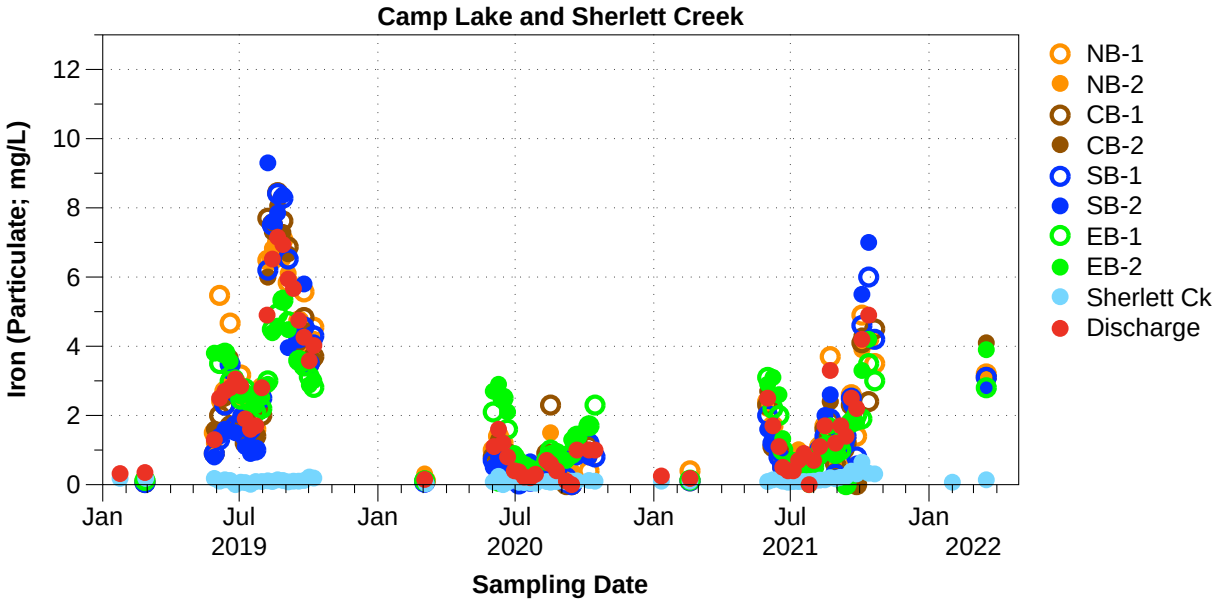

Figure 47. Particulate iron concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, 2019 to March 2022.

What isn't certain from the 2020 and 2021 monitoring results is why the shifts in iron partitioning are occurring, both overall between 2019 and the later years and specifically during September/October 2021. Total iron concentrations in 2020 and 2021 remained similar to previous years, indicating this overall shift is a real change in partitioning and is not due to a substantive change in loading of one fraction. The shift also can't be attributed to a change in

inflowing water quality; dissolved iron represented similar proportions of the total in Sherlett Creek in all of 2019, 2020, and 2021. The circumneutral pH and oxidizing conditions in the lake favour the formation of particulate iron, but iron also can adsorb to dissolved organic matter (DOM), resulting in the occurrence of higher dissolved iron concentrations than would otherwise be expected (e.g., Elder 1988). Dissolved organic carbon was measured in Camp Lake beginning in 2021, and the observed concentrations (Figure 37) certainly appear high enough to explain the predominance of dissolved iron when water quality indicates that particulate should dominate. The shift from dissolved to particulate late in the 2021 open water season was not due to a dramatic loss of DOC from the lake.

It is likely that the DOM would be in the form of humic and/or fulvic acids, given the location of Camp Lake at the bottom of a large (>100 km^2) watershed. Humic and fulvic acids, in some cases with adsorbed iron, are the source of the brown water streams and ponds that are common across northern Manitoba. The humic/fulvic acids are a product of the decomposition of terrestrial organic matter (e.g., from forested and wetland areas), representing the more decay-resistant remains of the organic matter that entered Sherlett Creek and flowed downstream.

Turbidity in Camp Lake, and in the Camp Lake discharge, was positively correlated with particulate iron concentrations, explaining 83% of the variation in turbidity in the discharge and 71% of the variation in turbidity across Camp Lake overall (Figures 48b and 49). The relationship between particulate iron and turbidity was consistently evident across the lake (Figure 48a). These relationships were much stronger in 2021 than in 2020 and were similarly strong to those in 2019 when particulate iron accounted for 83% of the variation in turbidity in the discharge and 80% of the variation in Camp Lake overall (DJRC 2020). The weaker relationships in 2020 than in either 2019 or 2021 largely reflect the very low particulate iron concentrations and turbidities in the South, Central, and North basins that year.

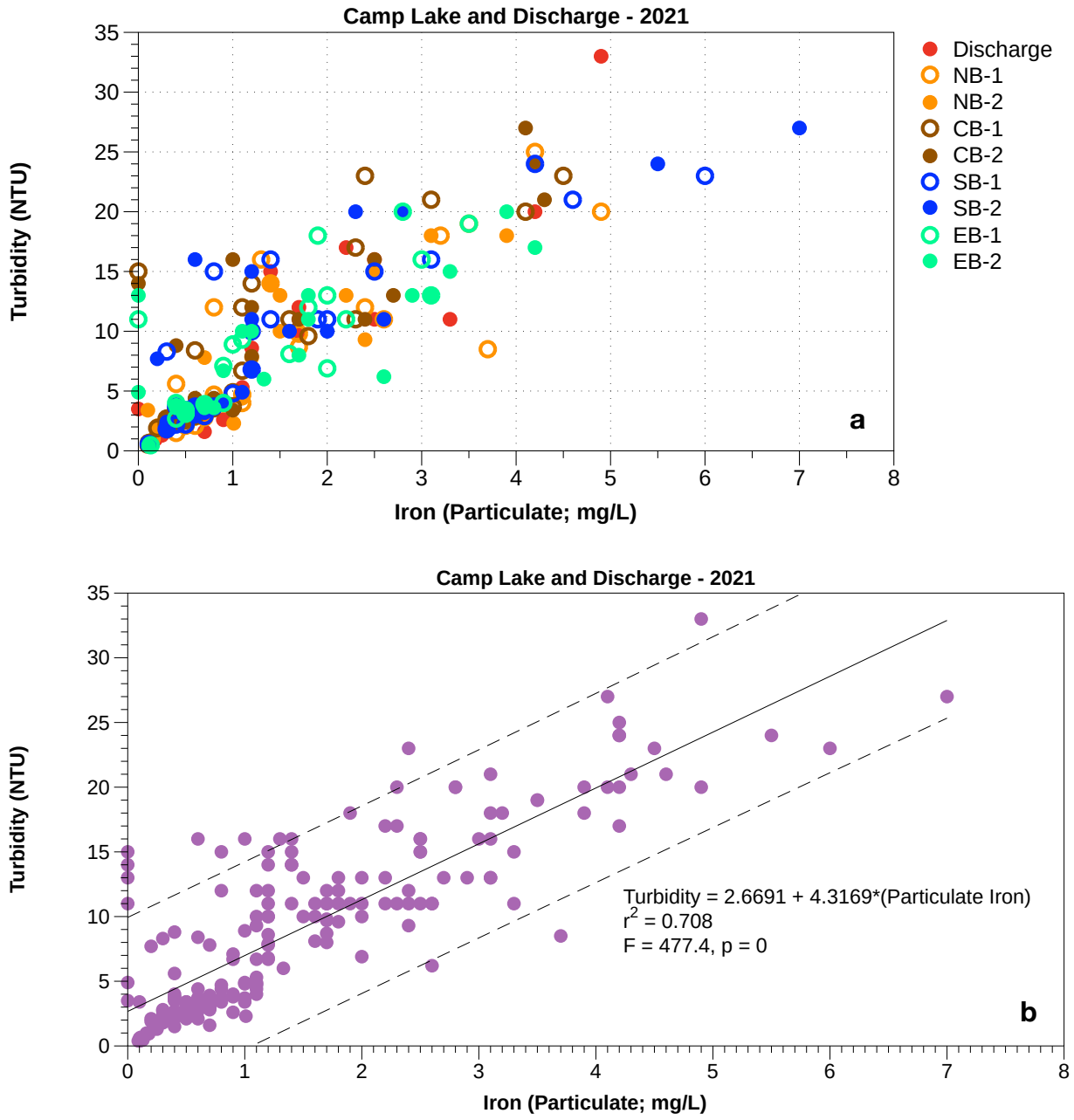

Figure 48. Relationship between particulate iron concentrations and turbidity in Camp Lake and the Camp Lake Discharge, 2021: (a) Relationship showing individual station data; and (b) Relationship showing pooled station data and linear regression.

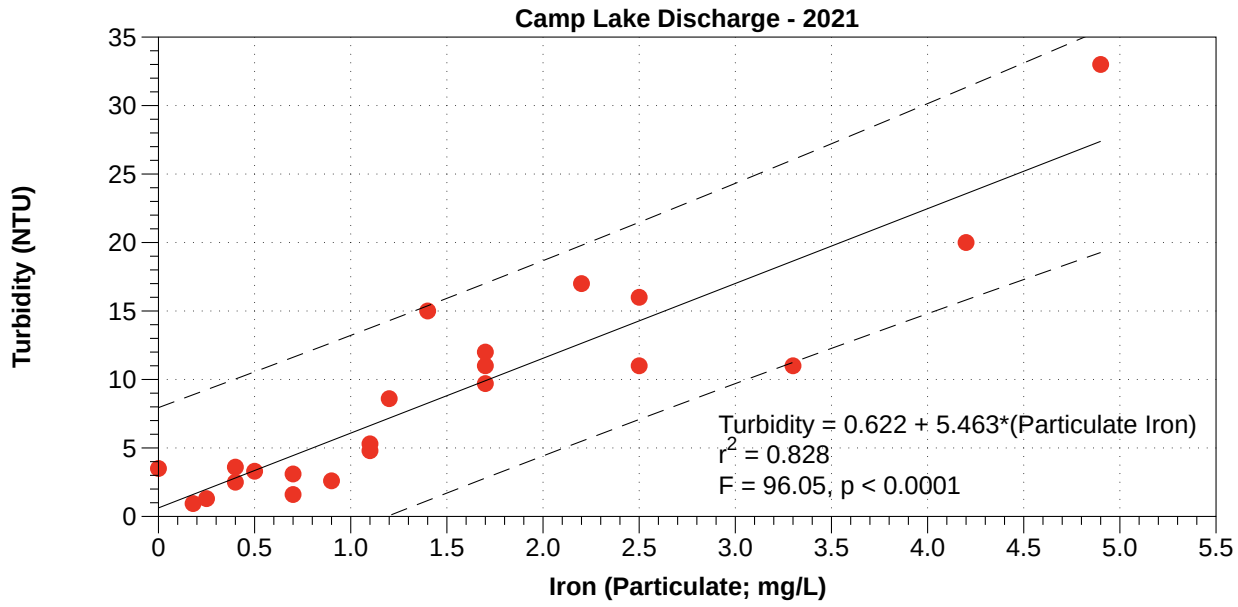

Figure 49. Relationship between Particulate Iron concentrations and Turbidity in the Camp Lake Discharge, 2021.

TSS concentrations were positively correlated with particulate iron concentrations in 2018 and 2019 (DJRC 2019 and 2020) and in 2021 (Figure 50) but not in 2020 (DJRC 2021). The absence of a relationship in 2020 likely was a result of the much lower TSS and particulate iron concentrations than in the other years.

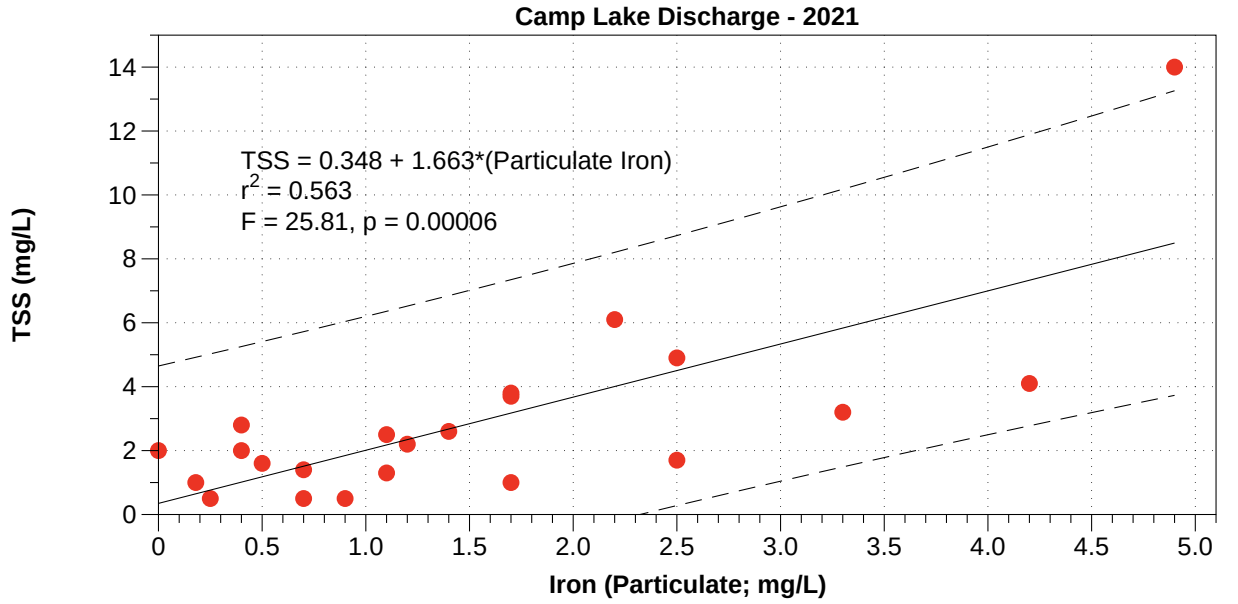

Figure 50. Relationship between Particulate Iron concentrations and Total Suspended Solids (TSS) in the Camp Lake Discharge, 2021.

TSS was positively correlated with turbidity in 2021 (Figure 51), as was the case in 2019 (DJRC 2020) and 2018 (DJRC 2019). The absence of a correlation in 2020 (DJRC 2021) is attributable to the very low turbidities (<9.5 NTU) that year.

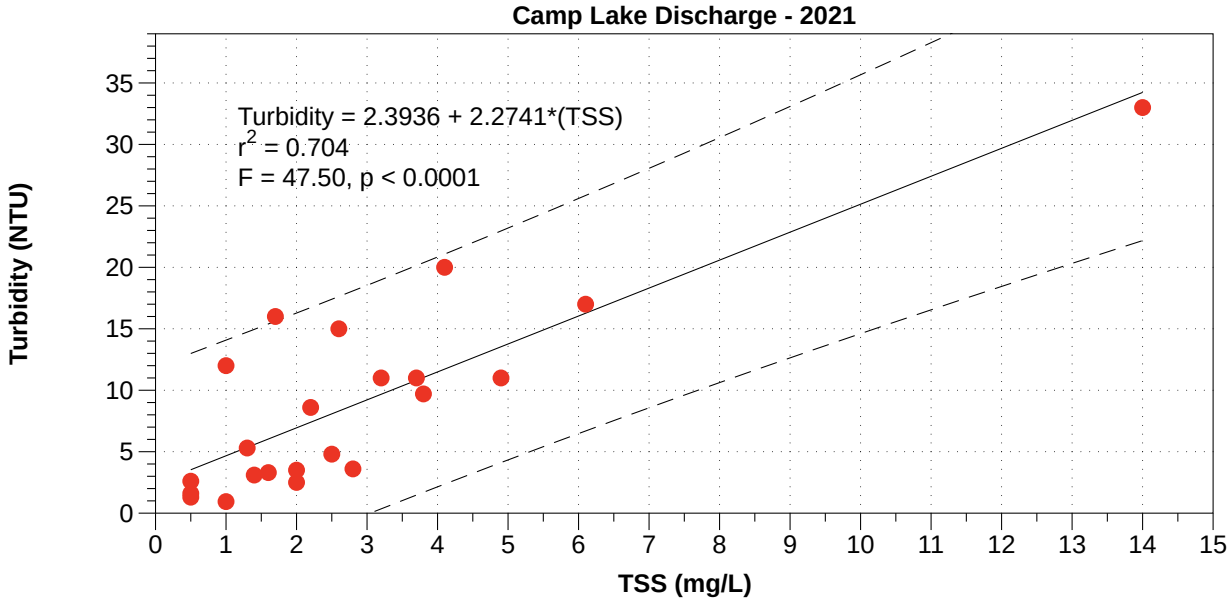

Figure 51. Relationship between Total Suspended Solids (TSS) and Turbidity in the Camp Lake Discharge, 2021.

In 2016, 2017, 2018, and 2019 (DJRC 2016, 2018, 2019, and 2020), iron discharged from Camp Lake into Cold Lake did not move much beyond the point of discharge (Figure 52), in most conditions not even reaching the monitoring stations within (CL3) or at the margins (CL7 and CL8) of the mixing zone. This was not the case in 2020 (DJRC 2021) and again in 2021 (Figure 52) and this is consistent with the much higher concentrations of dissolved iron in both 2020 and 2021, compared to previous years (Figure 46). The predominance of dissolved iron in the discharge, likely complexed with dissolved organic matter, largely eliminated sedimentation from occurring such that dilution was the only mechanism by which concentrations could attenuate in Cold Lake. The high flows that occurred throughout 2020 and in the first six weeks of the 2021 open water season (Figure 6) also played a role, reducing the residence time of the mixing zone and the potential for attenuation. However, by the end of July discharge flows were lower than in either of the previous 2 years and the discharge flow was negligible after the end of August – higher discharge flow was no longer a factor, yet the higher total iron concentrations persisted in the mixing zone. Based on the total iron concentrations in the discharge after mid-July and the approximate flows, concentrations in the mixing zone should have been similar to those in 2019, but weren't, indicating the higher dissolved iron concentrations are more important than high flows in affecting total iron concentrations in the mixing zone.

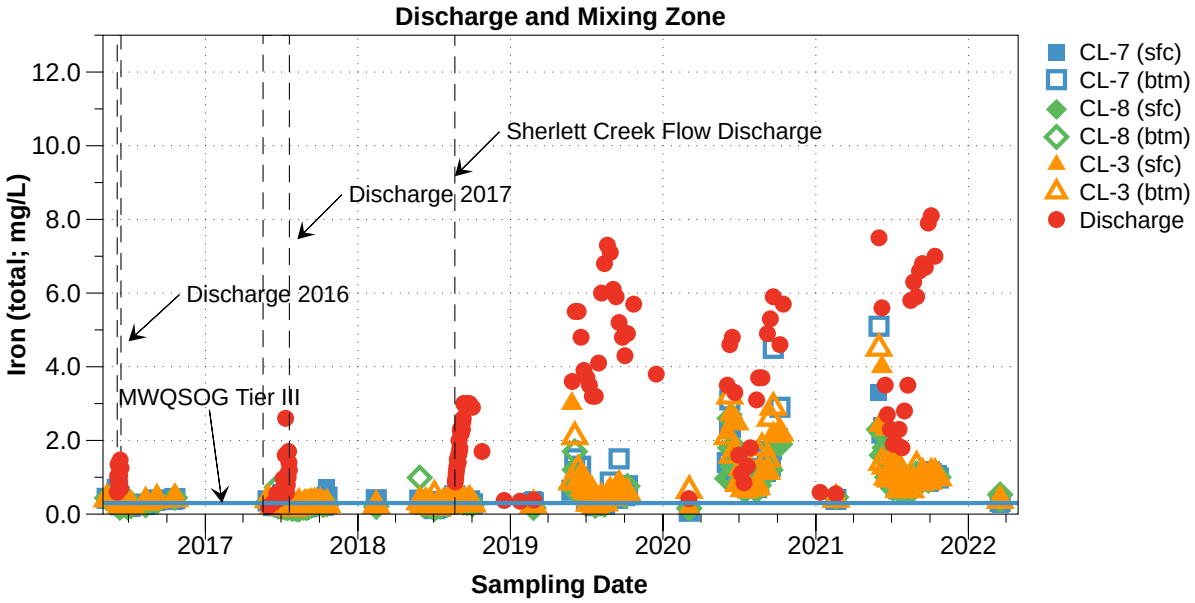

Figure 52. Total iron concentrations in the Camp Lake discharge and Cold Lake mixing zone, 2016 to March 2022.

Background total iron concentrations in Cold Lake in the absence of the Camp Lake discharge have ranged as high as 0.63 mg/L in the near-surface samples and 2.29 mg/L in the near-bottom samples since sampling started in 2015 (Figure 53). Near-surface total iron concentrations were elevated above background at the beginning of June at all of CL2, CL4, CL5, and CL6, with concentrations decreasing from 1.5 mg/L at CL2 to 0.87 mg/L at CL6. By the end of June, concentrations at CL6 were within background and concentrations at CL4 and CL5 were near background at 0.64 mg/L. CL2 remained above background at 0.92 mg/L. From July to the end of August, total iron concentrations at all four stations were near (CL2) or within (CL4, CL5, CL6) background. Concentrations increased again in September, exceeding background at CL2 (0.95 mg/L), CL4 (0.78 mg/L), and CL5 (0.72 mg/L) at the end of September and continuing into October at CL4 and CL5. Stations CL2 and CL6 weren't sampled in October.

The early June elevation of iron appears related to the Camp Lake discharge, while the increase in September does not appear to be related to the current discharge – there was low discharge in August and negligible to no discharge thereafter in 2021. A more likely cause of the September increase is autumnal mixing. Summer thermal stratification in Cold Lake developed before the first open water sampling date on June 8 and began breaking down with fall cooling in later August. The water column was fully mixed by the end of September (Appendix Tables A.20 and A.22 to A.24), enabling water column mixing to the bottom of the lake and entrainment of iron released from the lake sediments under the anoxic conditions that developed in the deep-water during summer. Near-bottom concentrations were within background throughout the open water season, but also typically exceeded near-surface concentrations through the stratified period (Figure 53).

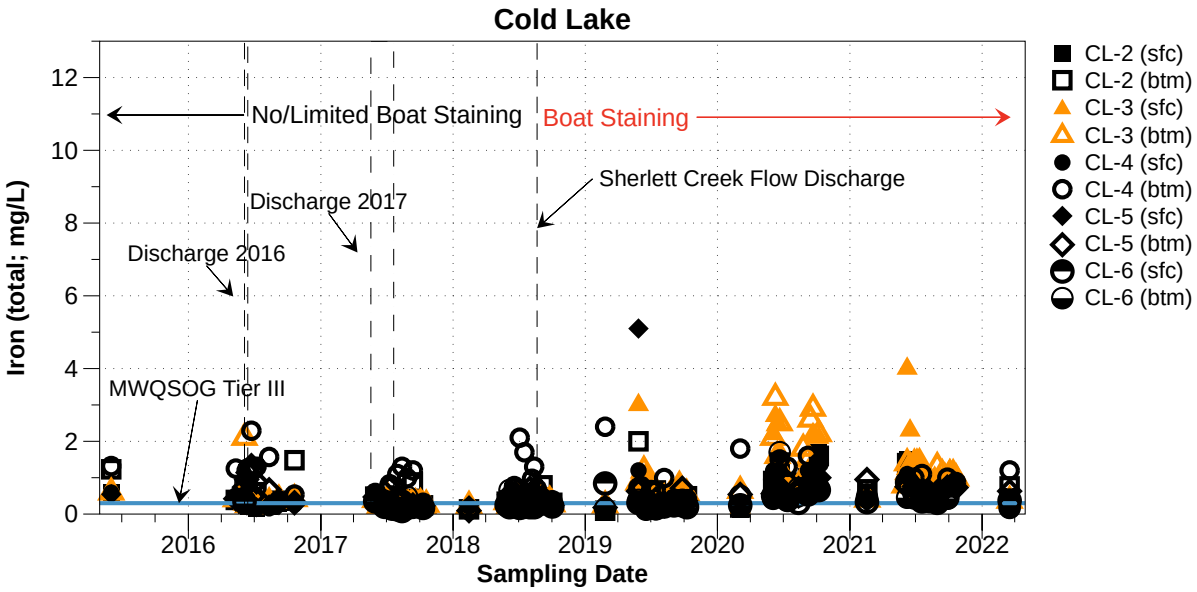

Figure 53. Total iron concentrations in the Cold Lake arm of Kississing Lake, 2015 to March 2022.

3.3.4.4 Silt Curtain Performance

Water turbidity in Camp Lake was not an issue of concern in Camp Lake in 2021 while there was a material inflow from Sherlett Creek. That inflow effectively ended in late August and turbidity increased, but there was no basis for evaluating the performance of the silt curtains at this negligible flow.

3.3.5 Metals

The 2021 open water season was the first in which the Sherlett Creek inflow had a predominant effect on the concentrations of metals (aluminum, cadmium, copper, and zinc) in Camp Lake and this influence was related to both flow (water quantity) and water quality. Aside from spring runoff, there were no heavy rainfall/runoff events over the open water season.

In general, the highest metal concentrations of the open water season occurred at the beginning of June, shortly following ice-out. Creek flows also were the highest at the beginning of June and, based on the decrease in Camp Lake level, flows decreased continually from the beginning of June through to early October (Figure 6) – by early July flow was lower than at any time in the 2020 open water season, and by early August flow was lower than at any time in the 2019 open water season.

Metal concentrations decreased continually from the beginning of June through to early August. These decreases appear related primarily to the flushing effect of the Sherlett Creek

flow, indicating that flushing greatly exceeded contributions of metals from any sources either within the lake or in the local watershed during this period. The declines stopped around early to mid-August either due to insufficient Sherlett Creek flow to overcome the minor residual local sources of metals to the lake (Al, Cd, and Zn) or, in the case of copper, to a combination of insufficient flow and higher metal concentrations in the inflowing creek. The role of insufficient flow is strongly implicated by the common timing of the ends in the initial declines for all four metals. Creek flows continued declining though August and were negligible from the end of August 2021 past 18 March 2022.

Concentrations of both total cadmium and total zinc, at the open water seasonal minima in early August 2021, were lower in all basins of Camp Lake than have occurred since Sherlett Creek flow was returned to Camp Lake in 2018. Although construction was not quite complete at that time, the monitoring results provide a clear indication

Concentrations of all metals slowly increased in all lake basins from the summer minimum through to the end of the open water season, reflecting the negligible flows. Construction activity adjacent to the East basin also likely contributed to higher metal concentrations than in other parts of the lake beginning in mid-August.

3.3.5.1 Aluminum

Total aluminum concentrations followed a U-shaped pattern of fluctuation over the 2021 open water season, with the highest concentrations occurring at the beginning and end of the open water season. The highest concentrations of the year occurred in all basins of Camp Lake at the start and end of the open water season, with the lowest concentrations occurring in mid-summer. The highest values in the South, Central, and North basins were slightly above the MWQSOG Tier III guideline (0.1 mg/L) and in the East basin were 2 to 3 times the guideline (Figure 54). Concentrations in all four basins declined quickly through June and into July, with the lowest concentrations of the open water season occurring around mid-July in all basins.

Concentrations along the main axis of the lake, in the South, Central, and North basins, were at or below the Tier III guideline by June 21 and generally remained below 0.1 mg/L through September 20 (Figure 54). There were a few occurrences of values in excess of 0.1 mg/L at single stations through this period, although these were most likely a product of the analytical issues associated with aluminum this year (see Section 2.2.1 above); the occasional higher values were inconsistent with conditions along the main axis and concentrations in Sherlett Creek also were consistently below the guideline through this period. Aluminum concentrations in the East basin declined to about 0.1 mg/L by mid-July, then gradually increased to about 0.2 mg/L by the end of the open water season.

Total aluminum concentrations in the discharge closely tracked concentrations in the North basin through to the end of discharges from Camp Lake around the end of August (Figure 54). Although values at both North basin stations remained below 0.1 mg/L through late October, values in the range of 0.12 to 0.21 mg/L were reported in the discharge samples from September

27 to October 13. The higher concentrations in the discharge samples during this period appear to be the product of contamination caused by sampling the discharge trickle.

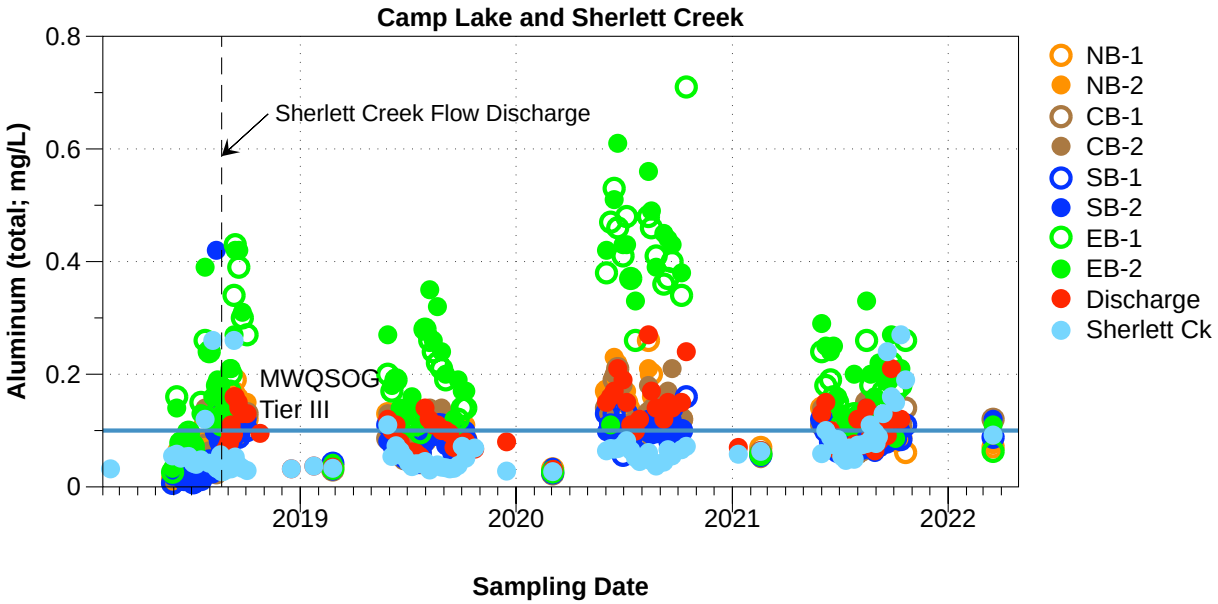

Figure 54. Total aluminum concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, February 2018 to March 2022.

The Camp Lake discharge appeared to have an effect on total aluminum concentrations in the Cold Lake mixing zone. Concentrations in the discharge exceeded 0.1 mg/L on June 1 and 8, as did values at all three mixing zone stations (Figure 55). This was consistent with the combination of aluminum concentration and discharge flow on these dates. By June 16 the concentration in the discharge was 0.1 mg/L, and the concentrations at all three mixing zone stations were below 0.1 mg/L. For the remainder of the open water season, total aluminum concentrations in the discharge were consistently below 0.1 mg/L and were similar to those during the same period in 2019, yet concentrations at the mixing zone stations were generally 2 to 2.5X higher in 2021 than in 2019. This was not due to higher discharge flows in 2021 - flows in July 2021 were similar to July 2019 and flows in August and later months were much lower in 2021 than in 2019.

Prior to 2020, aluminum concentrations in the mixing zone were unresponsive to concentration variations in the discharge (DJRC 2020). Most of the concentration range observed in the discharge in 2021 also occurred in 2018 and 2019, with no effect on concentrations in the mixing zone (Figure 29). The much higher flows early in the open water season certainly contributed to the higher concentrations that developed in the mixing zone in 2021, but this was not the case past mid-July.

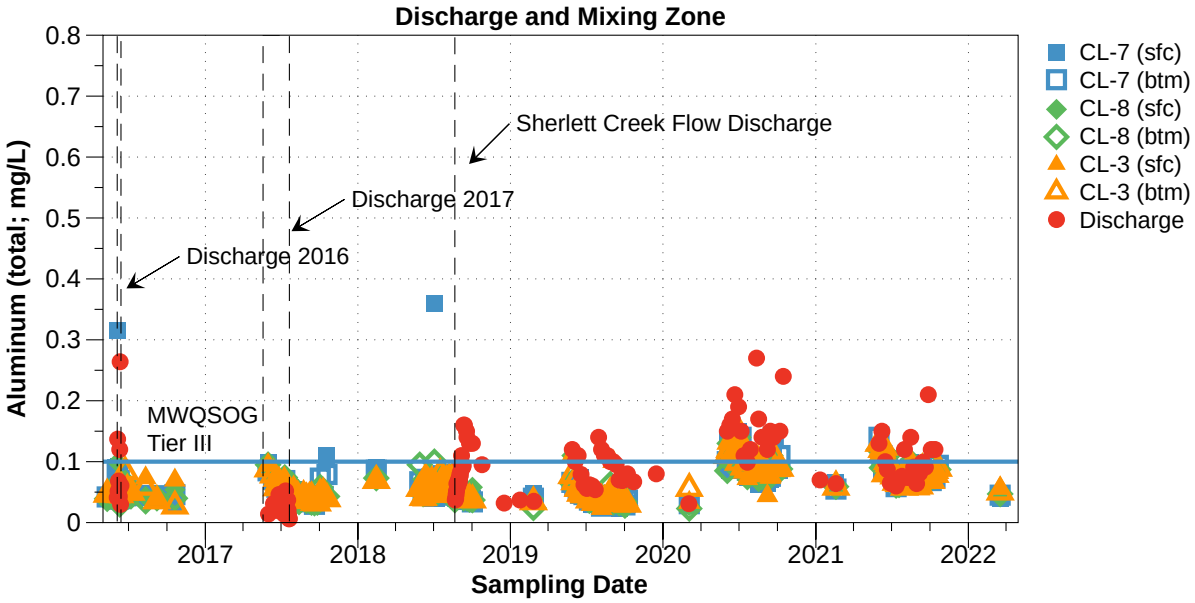

Figure 55. Total aluminum concentrations in the Camp Lake Discharge and Cold Lake Mixing Zone, May 2016 to March 2022.

A shift in the partitioning of aluminum between dissolved and particulate phases was noted in 2020, when 57% of the total occurred in the particulate fraction compared with 33% in 2019 (DJRC 2020). Adsorption to dissolved organic matter was identified as the cause, keeping the aluminum in suspension when it otherwise would form a particulate and settle out (Brusewitz, 1984; Litaor 1987; Dahlgren and Ugolini 1989).

Sorting out the factors affecting aluminum concentrations in the mixing zone in 2021 is complicated by the aluminum analytical issues experienced this year. Most occurrences of anomalous values have been identified and resolved by the laboratory, as described in Section 2.2.1, but it is difficult to capture all single anomalous values until the entire seasonal dataset is available and that largely precludes reanalysis. In this instance, two discharge values stand out - August 1, at 0.12 mg/L compared to 0.076 mg/L the preceding July 26 and 0.074 mg/L on the following August 9; and 0.14 mg/L on August 16, compared to 0.074 mg/L on August 9 and 0.091 mg/L on August 23 and these two higher values are entirely out of character compared to all values through July and August. The other factor to consider is when the discharge effectively ended in 2021. Although the open water season did not end until after October 21, there was effectively no discharge from Camp Lake after the beginning of September (Figures 6 and 7) even though discharge samples were recorded later in the season. When all the 2021 discharge data are considered, on average 44% of total aluminum in the discharge occurred in the dissolved phase (Appendix Table B1). Eliminating the anomalous August 1 and 16 values and limiting consideration to the 2021 period up to the September 13 sample, 57% of the total aluminum occurred as dissolved, which is the same fraction as occurred in 2020.

The Camp Lake discharge may have affected total aluminum concentrations in Cold Lake beyond the margins of the mixing zone in early June, but there is no clear indication of an effect

outside the mixing zone after that time (Figure 56). The highest background concentrations measured in Cold Lake in the absence of a discharge were 0.128 mg/L at CL5 (sfc) on 2 June 2015 and 0.15 mg/L at CL6 (btm) on 1 August 2018. The initial high value of 0.15 mg/L at CL2 (sfc) on June 8, was at the high end of the background range but also was higher than measured at the mixing zone stations on June 1 or 8, so there is some question as to the involvement of the discharge. Overall, total aluminum concentrations in Cold Lake outside the mixing zone were similar to those in 2018 prior to the start of the Sherlett Creek flows through Camp Lake and on this basis, it is apparent that the Camp Lake discharge was not adversely affecting total aluminum concentrations in Cold Lake outside the mixing zone.

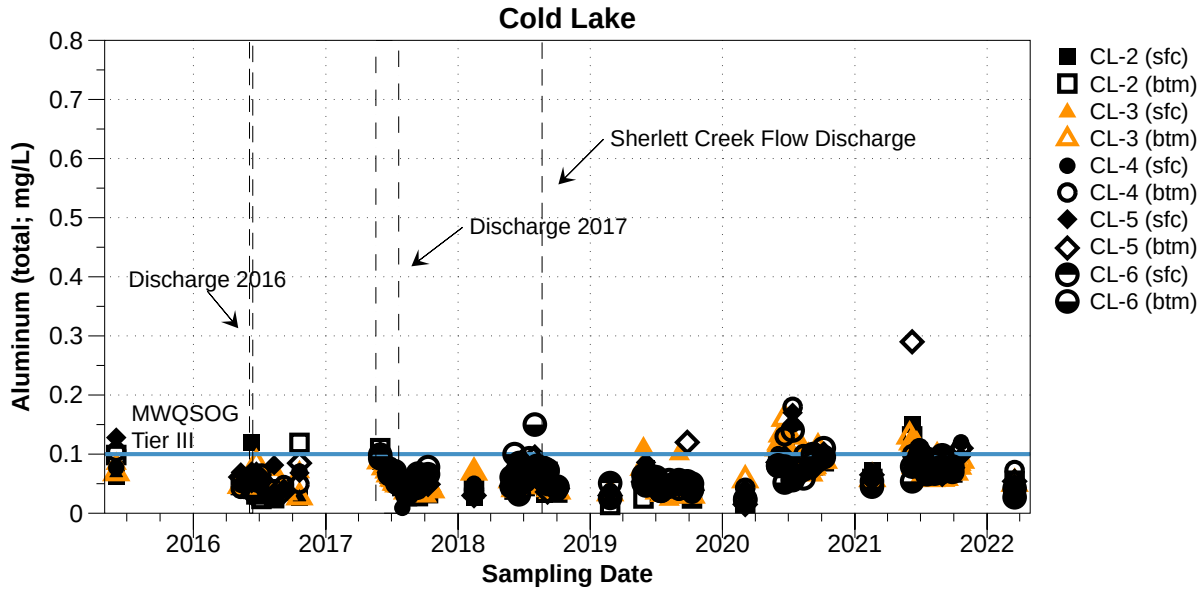

Figure 56. Total aluminum concentrations in the Cold Lake arm of Kississing Lake, May 2015 to March 2022.

3.3.5.2 Cadmium

The highest total cadmium concentrations of 2021 in Camp Lake occurred in all basins of the lake early in the open water season, shortly after ice-out. Values declined rapidly through to about July 12, and then continued to decline more slowly through to early August (Figure 57). The total cadmium concentrations in all lake basins in early August were the lowest open water season values measured since Sherlett Creek flow was restored to the lake in 2018. Values along the main lake axis during this minimum were 0.00025 to 0.00032 mg/L, well below the Tier II acute objective but about 50% above the chronic exposure objective. Cadmium concentrations in all basins of the lake gradually increased from the summer minimum through to the end of the open water season, with concentrations approximately doubling over this period.

The declining cadmium concentrations following ice-out appear to be a product of simple lake flushing driven by the Sherlett Creek inflow, with the decline slowing, and then stopping, as

Sherlett Creek flows diminished. By the end of August, Sherlett Creek flows had declined to near-zero and the slow increases in cadmium concentrations into the fall indicate the presence of a small degree of cadmium loading, either from within the lake or the adjacent watershed.

Cadmium concentrations in the East basin were about double the concentrations in the other basins at the start of the open water season but declined more quickly through to early August (Figure 57). By August 1, concentrations in the East basin were 1.3 to 1.7 times higher than in the other basins. The lowest cadmium concentrations consistently occurred in the South basin from the start of the open water season to mid-August, however, by August 30, concentrations in the South, Central, and North basins were the same and this trend continued through the remainder of the open water season and as late as March 2022.

Cadmium concentrations in Sherlett Creek were generally lower than in all basins of Camp Lake from the beginning of the open water season through to the beginning of September. Concentrations in Sherlett Creek were consistently higher than in the South, Central, and North basins of Camp Lake in September and October, and at times were higher than in the East basin. Cadmium concentrations along the main lake axis did not appear to increase further under ice cover and concentrations in the East basin decreased about 25% by 18 March 2022 (Figure 57).

The absence of a Sherlett Creek inflow sufficient to induce an outflow from Camp Lake over winter accounts for the absence of a decline in cadmium concentrations along the main lake axis and largely accounts for the small decrease in the East basin. Substantial declines in metal concentrations occurred in winter 2019, 2020, and 2021, with concentrations in all lake basins dropping near or below the Tier II chronic objective - in all cases, Sherlett Creek flow continued through the lake in winter.

Cadmium is more mobile in freshwaters than are other metals, typically occurring predominantly in the dissolved fraction (EPA 1979). The annual average proportion of cadmium occurring in the dissolved fraction in Camp Lake in 2021 ranged from 80% at NB-2 to 88% at SB-1 and was similar to the lake-wide averages in 2020 (86%) and 2019 (78%) (Appendix Tables B.1 to B.9 in DJRC 2020, 2021, and the present study).

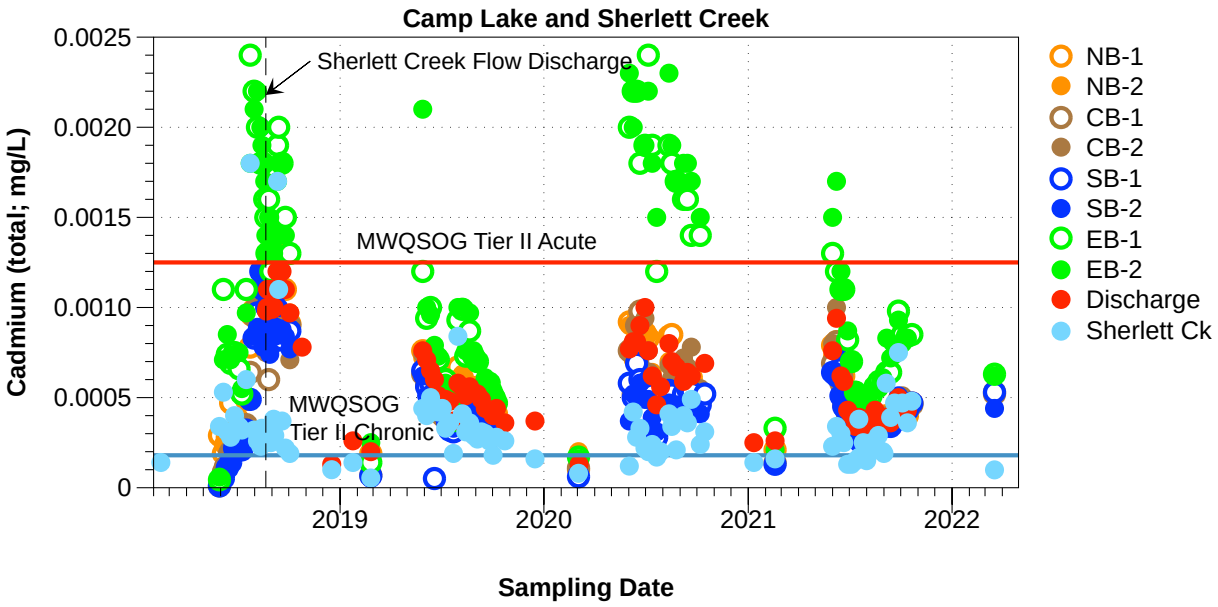

Figure 57. Total cadmium concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, February 2018 to March 2022.

The Camp Lake discharge affected cadmium concentrations in the Cold Lake mixing zone for a short period in 2021 (Figure 58). Concentrations at stations CL7 and CL8, at the margin of the mixing zone were below the Tier II chronic objective (0.00018 mg/L) by July 12, and all mixing zone stations were below the objective by July 19 and remained well below the objective for the remainder of the open water season. This period of effect was much shorter than in 2020, when total cadmium concentrations at all three stations exceeded the Tier II objective for most of the open water season but was two weeks longer than in 2019. Total cadmium concentrations in the discharge were similar in all three years, with the variable effect on concentrations in the mixing zone related to the discharge flow.

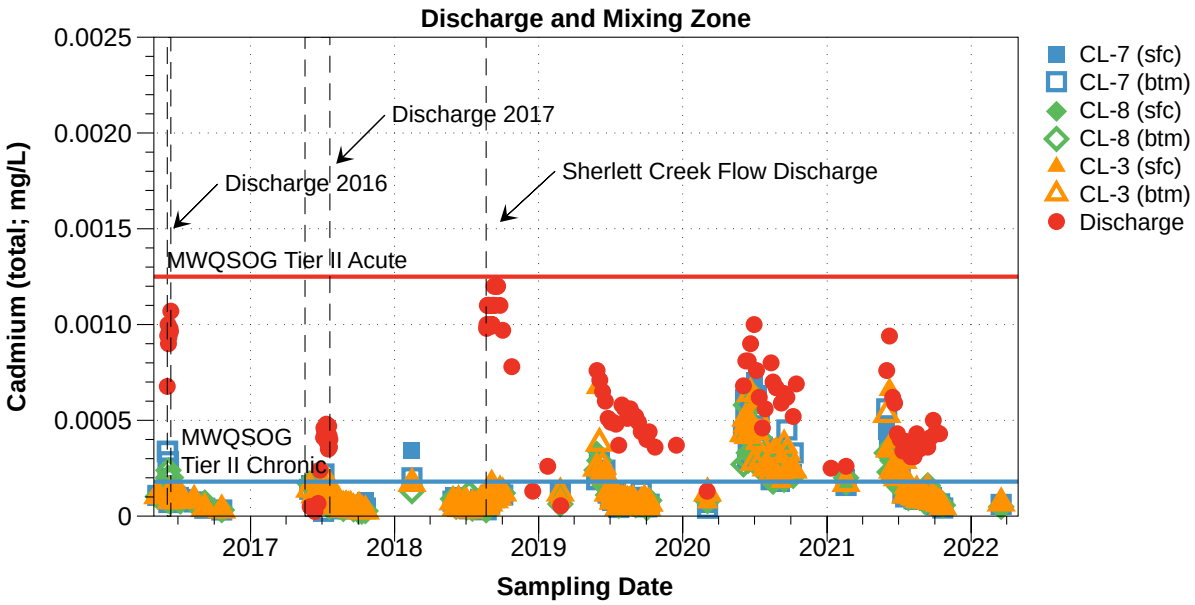

Figure 58. Total cadmium concentrations in the Camp Lake Discharge and Cold Lake Mixing Zone, May 2016 to March 2022.

The short-term effect of the Camp Lake discharge on total cadmium concentrations extended beyond the mixing zone into Cold Lake during the 2021 open water season (Figure 59). The MWQSOG Tier II chronic exposure objective was exceeded in the near-surface samples from CL2 and CL4 on June 6 and 28 and was marginally exceeded (0.00019 mg/L) at CL5 on June 28. By the next sampling date on July 19, cadmium concentrations in the near-surface samples at all stations except CL6 were at or below the Tier II chronic exposure objective and concentrations continued to decline through the open water season. The July 19 value at CL6 (0.0061 mg/L) is not explained by anything related to the Camp Lake discharge, this value is much higher than any measured in Cold Lake outside the mixing zone in the 2021 open water season.

Total cadmium concentrations in the near-bottom samples at station CL2 exceeded the Tier II chronic objective on June 8 (0.00026) and 28 (0.00024). All other near-bottom measurements at all the Cold Lake stations outside the mixing zone were below the Tier II chronic objective and declined through the open water season.

In the absence of the Camp Lake discharge, total cadmium concentrations in Cold Lake have occurred up to a maximum of 0.00034 mg/L (CL7 (sfc) 14 Feb 2018). Aside from the unusual value measured at CL6 noted above, none of the values measured in Cold Lake outside the mixing zone was higher than this maximum background value during the 2021 open water season (Figure 33). On that basis, the Camp Lake discharge is not considered to have had an adverse effect on cadmium concentrations in Cold Lake outside the mixing zone.

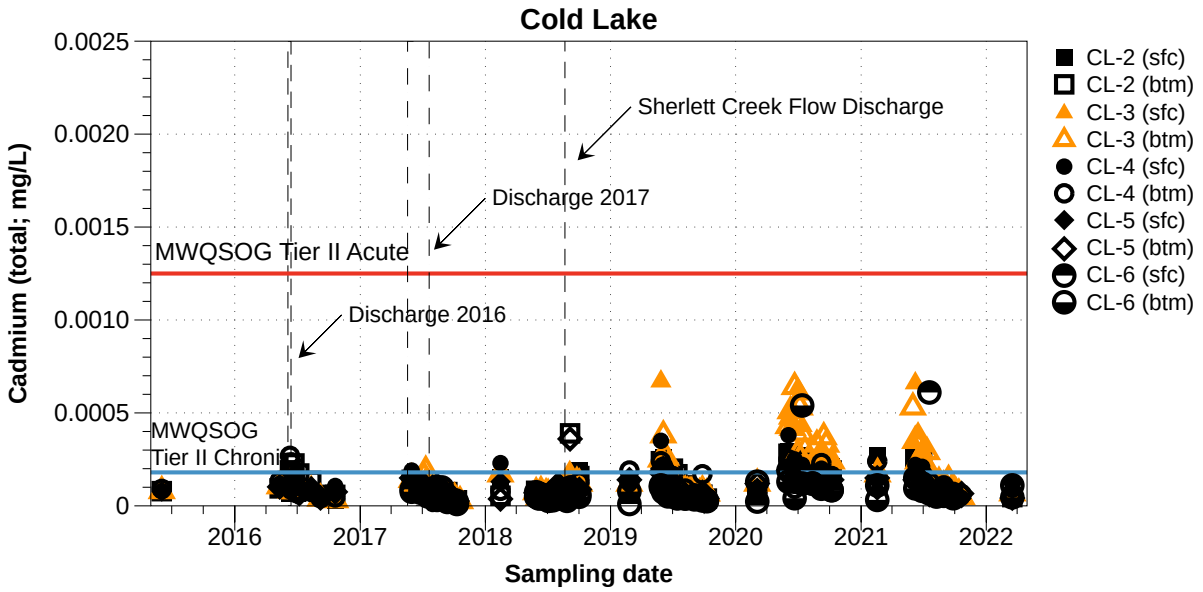

Figure 59. Total cadmium concentrations in the Cold Lake arm of Kississing Lake, May 2015 to March 2022.

3.3.5.3 Copper

Total copper concentrations along the main axis of Camp Lake (South, Central, and North basins) followed the L-shaped seasonal pattern also exhibited by zinc and cadmium. The highest concentrations occurred shortly after ice-out, declined rapidly through to about July 12, and then continued to decline more slowly to early- to mid-August when the open water season minima occurred in all lake basins (Figure 60). Copper concentrations in the East basin were about 75% higher than in the South basin and 50% higher than in the Central and North basins at the start of the open water season but declined more quickly through to the end of July, when concentrations in the East basin were 10 to 35% higher than in the other basins. The lowest copper concentrations consistently occurred in the South basin from the start of the open water season to mid-July, with similar concentrations in the South, Central, and North basins through the remainder of the open water season. The minimum open water concentrations reached in all lake basins during the 2021 open water season were similar to those in 2019 and were much lower than in 2020. Total copper concentrations in all parts of Camp Lake exceeded the Tier II chronic and acute exposure objectives throughout the 2021 open water season.

Copper concentrations on the main lake axis remained relatively stable from early August to late September, then increased slightly into the end of the open water season. Concentrations in the East basin started to increase around August 9 and that increase progressed almost as rapidly as did the spring decrease, with concentrations by mid to late October comparable to those at the beginning of June. The timing of this increase coincided with project construction works around the island in the East basin, as did the timing of similar increases of cadmium and zinc in the East basin.

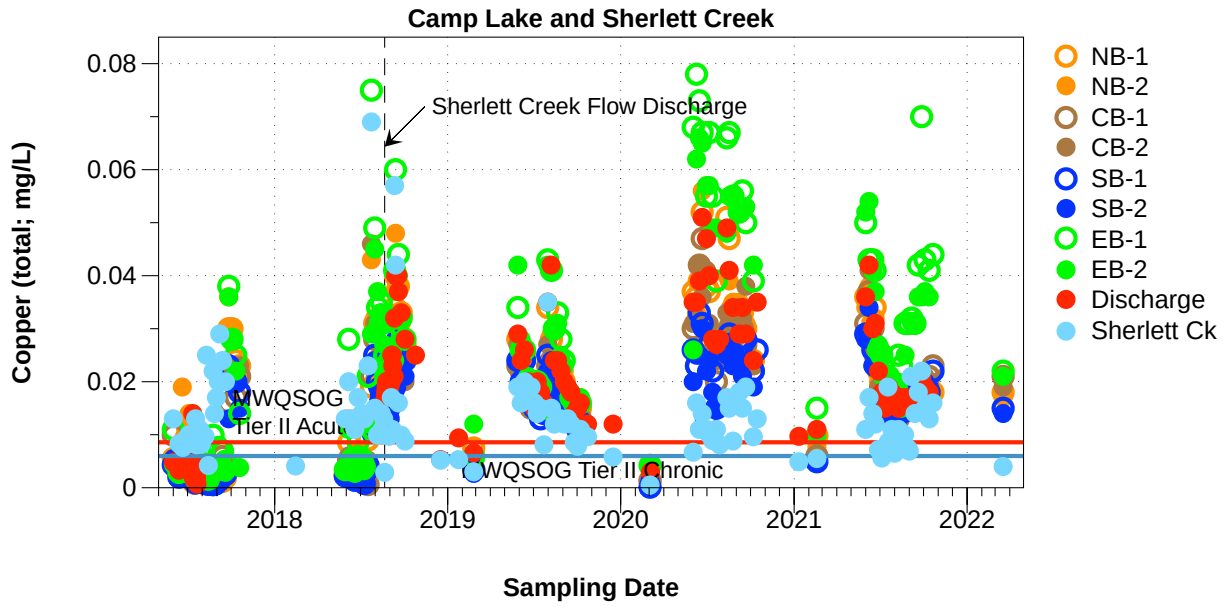

Figure 60. Total copper concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, February 2018 to March 2022.

Total copper concentrations in the inflowing Sherlett Creek were lower than in Camp Lake at the start of the open water season but, by mid-July and continuing through to the end of the open water season, concentrations in Sherlett Creek were periodically as high, or higher, than along the main lake axis (Figure 60).

As noted for cadmium and zinc, the declining copper concentrations following ice-out appear to be a product of simple lake flushing driven by the Sherlett Creek inflow, with the decline slowing, and then stopping, as Sherlett Creek flows diminished. However, unlike the other metals, copper concentrations in the inflowing creek appear to have contributed to the stalled decline. Local copper loading along the main lake axis also appeared to be low through September and October, explaining the small increase occurring through this period.

The absence of a Sherlett Creek inflow sufficient to induce an outflow from Camp Lake over winter accounts for the absence of a decline in total copper concentrations in the lake (Figure 60). Declines in metal concentrations occurred in winter 2019, 2020, and 2021 and, in all cases, Sherlett Creek flow continued through the lake in winter.

The annual average proportion of copper occurring in the dissolved fraction in Camp Lake ranged from 77% at NB-2 to 82% at SB-2 in 2021 and was similar to the lake-wide average in 2020 (80%) and much higher than in 2019 (50%) (Appendix Tables B.1 to B.9 in DJRC 2020, 2021, and the present study).

Total copper concentrations in the discharge in 2021 generally were within the range measured in 2018, 2019, 2020, and declined over the open water season in the distinctive L-shaped pattern that occurred in both 2019 and 2020 (Figure 60). Concentrations in the discharge were highest

following ice-out and declined rapidly through June, levelling out in the range of 0.015 to 0.018 mg/L for the remainder of the open water season. Copper concentrations at the three mixing zone stations exhibited the same pattern, declining sharply through June and into the first half of July, then levelling out in the range of 0.0074 to 0.011 mg/L over the remainder of the open water season (Figure 61).

The discharge had much less effect on copper concentrations in the mixing zone in 2021 than in 2020, but a greater effect, at similar concentrations in the discharge, than in 2018 or 2019 (Figure 61). The lesser effect than 2020 is attributable to the lower discharge flows, particularly after mid-July (Section 3.1). The greater effect than 2019, at similar or lower mid-summer discharge flows than in 2019, is attributable to the higher proportion of copper in the dissolved phase which has now occurred in two successive years. Copper, like aluminum and iron, also readily adsorbs to dissolved organic matter (Breault et al. 1996, EPA 1979, Tan et al. 1988), keeping more copper in solution than would otherwise be expected based on water chemistry. This behaviour can affect the attenuation of copper in the Cold Lake mixing zone, due to less local sedimentation.

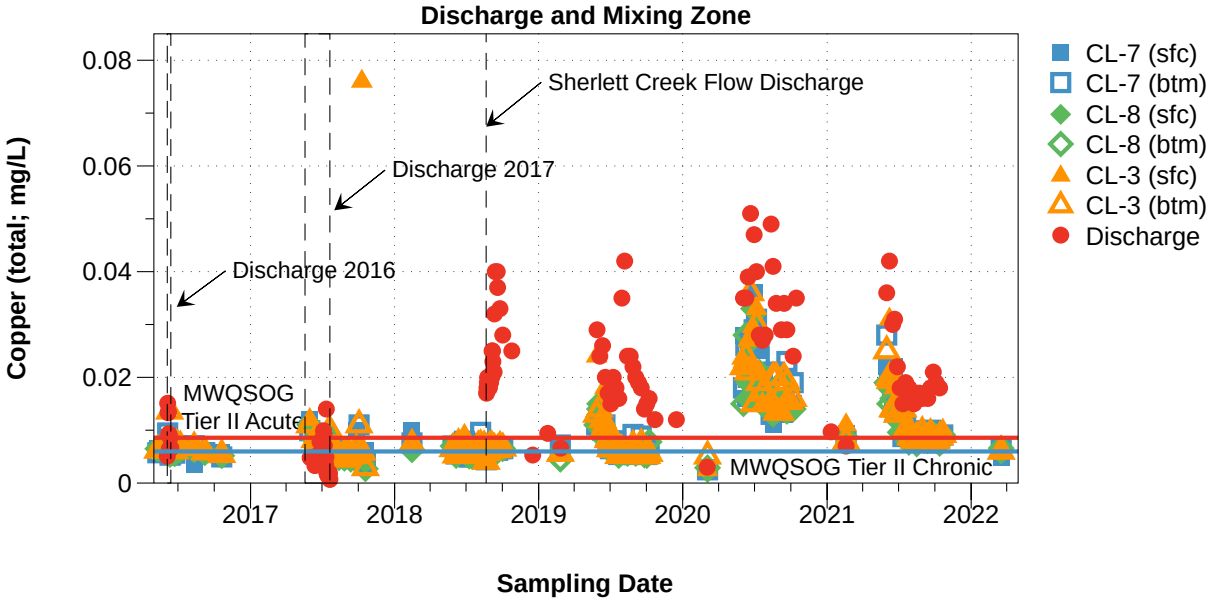

Figure 61. Total copper concentrations in the Camp Lake Discharge and Cold Lake Mixing Zone, May 2016 to March 2022.

An effect is defined here as a concentration exceeding the background concentration in Cold Lake in the absence of a discharge from Camp Lake. Total copper concentrations in Cold Lake have recently ranged as high as 0.011 mg/L outside of discharge events, both within the mixing zone and in other parts of Cold Lake, which sets the upper range of background concentrations (Figures 61 and 62). The high background concentrations in Cold Lake reflect the long history of uncontrolled ARD discharges from the Sherridon site prior to the start of the reclamation project (Tetra Tech WEI 2016). Although these discharges ended in the fourth quarter of 2008, the long-term effects of historical discharges from the mine site, beginning as early as 1927,

remain to the present. Internal metal loading, released from the lake sediments, is prevalent on Cold Lake, particularly under ice cover, as seen in March 2020, February 2021, and March 2022 (Figure 36). As a result, background total copper concentrations in Cold Lake typically exceed the MWQSOG Tier II chronic exposure objective most of the time and at times exceed the Tier II acute exposure objective (Figures 61 and 60).

The Camp Lake discharge affected total copper concentrations in the Cold Lake mixing zone from the beginning of June through to early/mid-July (Figure 61). Copper concentrations exceeded 0.011 mg/L at mixing zone stations CL7 and CL8 from the beginning of the open water season to July 5 and at station CL3 to July 12. Copper concentrations were at or below 0.011 for the remainder of the 2021 open water season and under winter ice cover in February 2021 and March 2022.

Copper concentrations at the mixing zone stations exceeded the MWQSOG Tier II chronic exposure objective through the 2021 open water season, exceeded the acute exposure objective from the start of the open water season to mid-July, and then concentrations fluctuated below and above the acute objective for the remainder of the open water season (Figure 61).

Outside the mixing zone, total copper concentrations were slightly elevated (i.e., 0.012 to 0.015 mg/L) above background at CL2 (sfc and btm), CL4 (sfc), and CL5 (sfc) on June 8 and at CL2 (sfc), CL4 (btm), and CL5 (btm) on June 28 (Figure 62). Total copper concentrations were otherwise at or below 0.011 mg/L in both the near-surface and near-bottom samples at all stations (Figure 62).

Although the slightly elevated values also exceed the Tier II acute exposure objective, these concentrations were not acutely toxic, as indicated by the consistently non-acutely toxic discharge from Camp Lake (Section 3.4). Given the small magnitude of the elevation, the short duration of the elevation, and the absence of acute toxicity, the observed elevations in total copper concentration are not considered to be adverse. Further, given the prevailing high copper background condition in Cold Lake, some degree of adaptation and tolerance can be expected to have developed in the aquatic biota in Cold Lake, although the degree of adaptation has not been investigated.

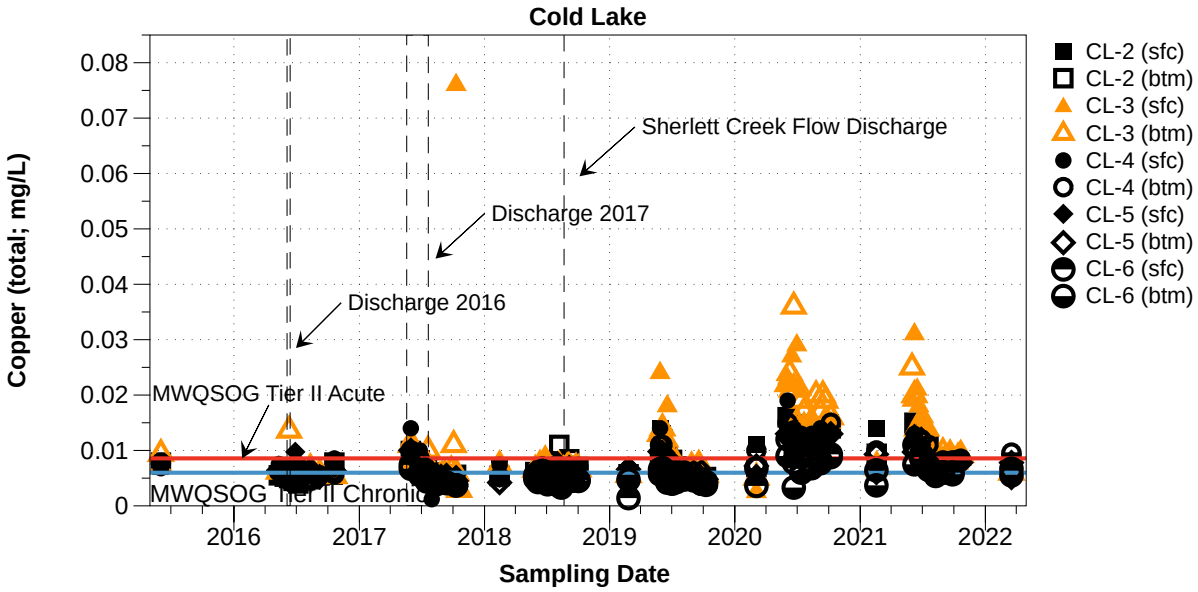

Figure 62. Total copper concentrations in the Cold Lake arm of Kississing Lake, May 2015 to March 2022.

3.3.5.4 Zinc

The highest total zinc concentrations in Camp Lake in 2021 occurred in all basins of the lake early in the open water season, shortly after ice-out, declined rapidly through to about July 12, and then continued to decline more slowly through to around August 9 (Figure 63). By August 9, concentrations at SB-1, CB-1, and CB-2 all were lower than the Tier II aquatic life objective (0.0771 mg/L) and concentrations at all stations were lower than measured at any time in the respective basin since Sherlett Creek flow was restored to the lake in 2018. Zinc concentrations in all basins of the lake gradually increased from the summer minimum through to the end of the open water season, with concentrations approximately doubling over this period.

The declining zinc concentrations following ice-out appear to be a product of simple lake flushing driven by the Sherlett Creek inflow, with the decline slowing, and then stopping, as Sherlett Creek flows diminished. By the end of August, Sherlett Creek flows had declined to near-zero and the slow increases in zinc concentrations into the fall indicate the presence of a small degree of internal zinc loading. The subsequent increases developed as Sherlett Creek flow declined to, and remained at, near-zero.

Zinc concentrations in the East basin were about double the concentrations in the other basins at the start of the open water season but declined more quickly through to early August. By August 9, concentrations in the East basin were 1.5 to 1.6 times higher than in the other basins. The lowest zinc concentrations consistently occurred in the South basin from the start of the open water season to mid-August, however, by August 30, concentrations in the South, Central,

and North basins were the same and this trend continued through the remainder of the open water season and as late as March 2022.

The late season increase in the East basin was much larger than in the other basins, a 0.12 mg/L increase at both East basin stations, compared with 0.075 mg/L in the South basin, 0.069 mg/L in the Central basin, and 0.08 mg/L in the North basin. The larger increase in the East basin developed at the same time as the mine waste removal work around the East basin island was conducted, and this work had the potential to directly affect short term metal mobilisation to the East basin.

Zinc concentrations in Sherlett Creek were generally lower than in all basins of Camp Lake from the beginning of the open water season through to the beginning of September. Concentrations in Sherlett Creek were consistently higher than in the South, Central, and North basins of Camp Lake in September and October, and at times were higher than in the East basin. Zinc concentrations did not appear to increase further under ice cover; concentrations in all four basins on 18 March 2022 were about the same as on 13-21 Oct 2021 in the absence of any significant Sherlett Creek inflow.

The absence of a Sherlett Creek inflow sufficient to induce an outflow from Camp Lake over winter accounts for the absence of a decline in zinc concentrations in the lake. Declines in metal concentrations occurred in winter 2019, 2020, and 2021 and, in all cases, Sherlett Creek flow continued through the lake in winter.

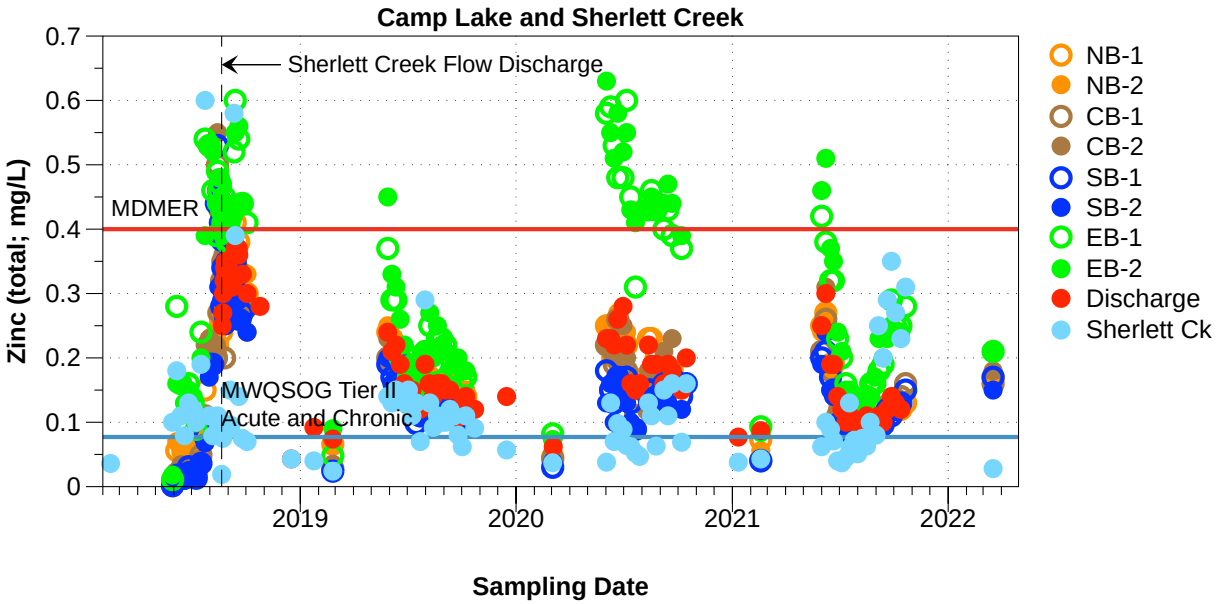

Figure 63. Total zinc concentrations in Camp Lake, the Camp Lake Discharge, and Sherlett Creek, February 2018 to March 2022.

The annual average proportion of zinc occurring in the dissolved fraction in Camp Lake ranged from 81% at NB-2 to 88% at SB-1 and was similar to the lake-wide average in 2020 (90%) and 2019 (82%) (Appendix Tables B.1 to B.9 in DJRC 2020, 2021, and the present study).

The Camp Lake discharge affected zinc concentrations in the Cold Lake mixing zone for a short period following ice-out in 2021; concentrations at all three mixing zone stations exceeded the MWQSOG Tier II objective from the start of sampling at the beginning of June until July 5 at CL7 and CL8, on the margin of the mixing zone, and until July 12 at CL3 (Figure 64). Concentrations were below the Tier II objective for the remainder of the 2021 open water season as well as under ice cover in February 2021 and in March 2022.

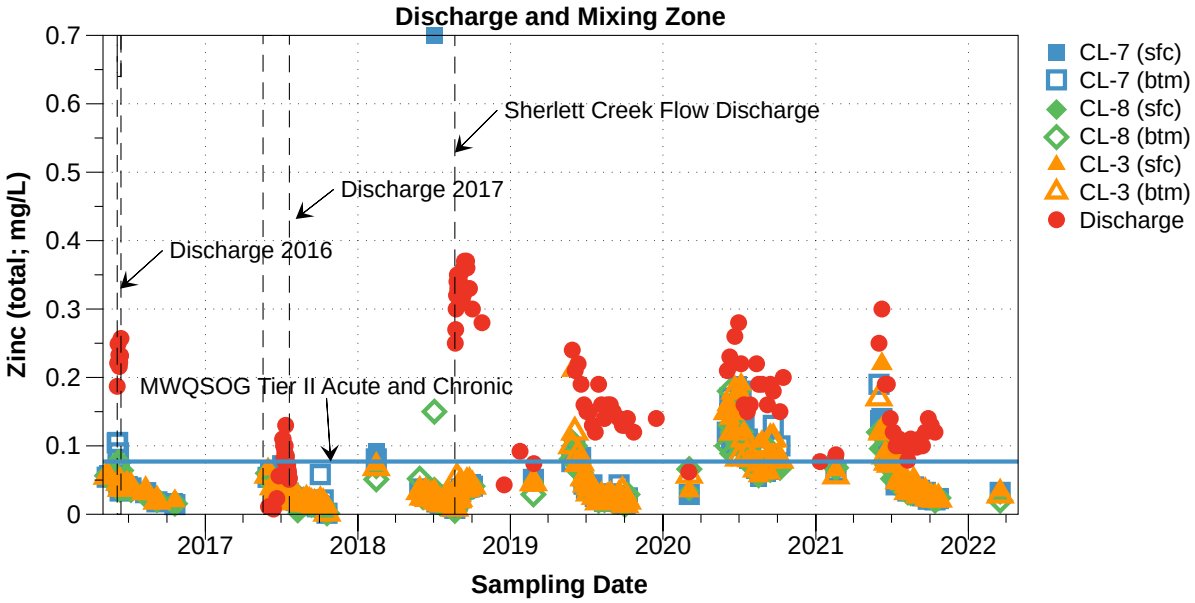

Figure 64. Total zinc concentrations in the Camp Lake Discharge and Cold Lake Mixing Zone, May 2016 to March 2022.

The Camp Lake discharge had a short-term effect on zinc concentrations in Cold Lake beyond the mixing zone (Figure 65). Total zinc exceeded the upper range of background zinc concentrations (0.034 to 0.078 mg/L) at CL2 (sfc, 0.094 mg/L; and btm, 0.098 mg/L) and CL4 (sfc, 0.084 mg/L) on June 8. Concentrations at CL5 (sfc) and CL6 (sfc) were at the upper end of the background range and near-bottom concentrations at CL4, CL5, and CL6 were in the middle of the background range. Total zinc in the near-surface samples from all of CL2, CL4, CL5, and CL6 and in the near-bottom sample at CL2 exceeded the MWQSOG Tier II objective on June 8. By the next sampling date, June 28, total zinc was below the Tier II objective at both depths at all locations and concentrations at all stations were within the background range. Zinc concentrations continued to decline through to the end of September. Given the small magnitude of the elevation (maximum 20% above background, which is a marginally statistically valid difference), the short duration of the elevation, and the absence of acute toxicity, the observed elevations in total zinc concentration are not considered to be adverse.

Over the past 5 winters (2018, 2019, 2020, 2021, and 2022), zinc concentrations under ice in Cold Lake have tended to be higher than during much of the open water season and in all years were higher at many stations than in the Camp Lake discharge during winter or, in the case of winter 2022, in the absence of a discharge (Figure 65). This was not an effect of the Camp Lake discharge, instead indicating internal loading within Cold Lake. The remaining contaminated sediments within Cold Lake noted above are the likely source of this internal loading.

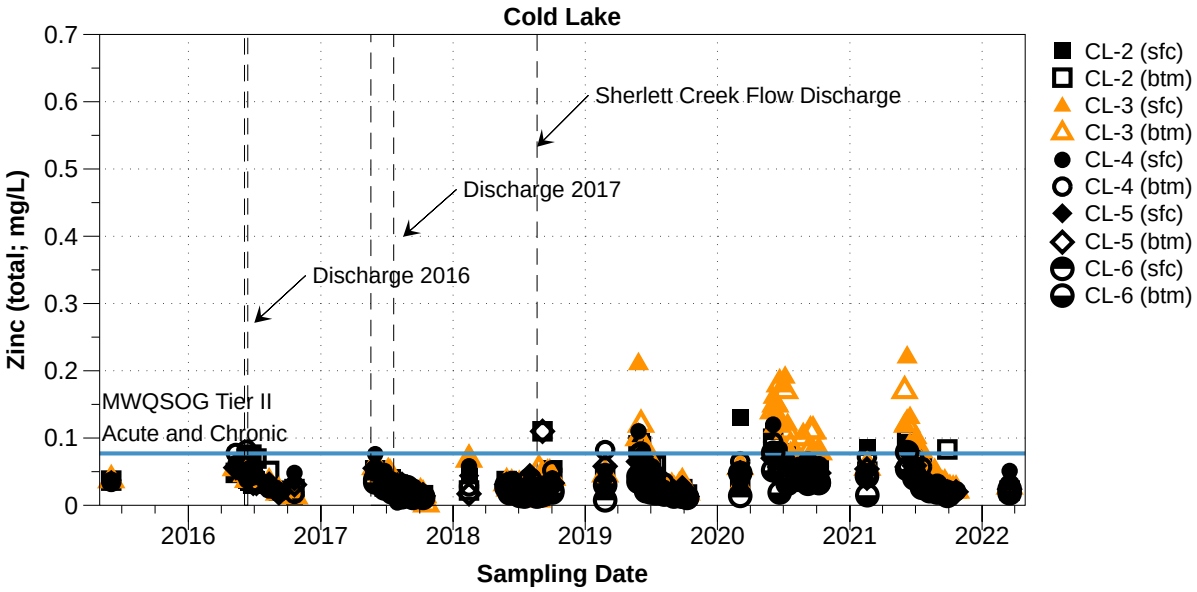

Figure 65. Total zinc concentrations in the Cold Lake arm of Kississing Lake, May 2015 to March 2022.

3.4 Discharge Toxicity

The Camp Lake discharge at the North weir was sampled for testing of acute toxicity (96-hour LC_{50}) to juvenile Rainbow trout on 5 dates in 2020 (June 2, July 6, August 12, September 7, and October 7). The LC_{50} is the effluent concentration that is lethal to 50% of the fish tested. Rainbow trout are one of the standard test organisms and are used because they are more sensitive to potentially toxic materials than many other fish species. An LC_{50} result of >100% indicates the discharge is not acutely toxic to fish. All 5 test results returned an LC_{50} > 100% (Appendix B2). The Camp Lake discharge was not acutely toxic to fish at any time over the five-month open water period considered in this study. Toxicity testing was focused on the open water season because parameter concentrations in the Camp Lake discharge are highest during the open water season – under ice cover parameter concentrations approach those in Sherlett Creek upstream of Camp Lake.

3.5 Progress Toward Protection of Kississing Lake

One of the primary objectives of the Sherridon Reclamation Project is to prevent further degradation of Kississing Lake water quality related to runoff and discharge from mine waste at the former Sherridon mine site. With construction completed in mid-September 2021, it is worthwhile evaluating the degree of protection of Kississing Lake that has been achieved by the subaqueous disposal of the Sherridon mine waste in Camp Lake.

Key metal concentrations in the Camp Lake discharge during the 2021 open water season were 75 to 97% lower, on average, than in September 2008, the last time the discharge was sampled before the reclamation project works were initiated (Table10). For all the key metals, the mean dissolved concentration in the discharge was 3 to 6% lower than the mean total concentration. Over the same period, discharge pH increased from 3.4 to 7.0.

With the exception of iron, the reduced key metal concentrations in the Camp Lake discharge have resulted in proportionate reductions in concentrations at stations CL2 through CL4 in Cold Lake. Smaller reductions occurred at station CL5 and CL6 than at the other stations because concentrations at CL5 and CL6 were not originally elevated to the same extent as at the stations closer to the historical Camp Lake discharge (Tetra Tech WEI 2016; and Tables 10, 11, and 12).

As a result of the substantially reduced key metal concentrations in the Camp Lake discharge, the mean concentrations of total aluminum, cadmium, and zinc in 2021 were generally below the applicable MWQSOG Tier II chronic exposure objectives (cadmium and zinc) or Tier III guideline (aluminum) (Table 11). This is a substantial improvement compared to 2008, when total aluminum concentrations exceeded the Tier III guideline across Cold Lake and both total cadmium and total zinc exceeded the applicable Tier II acute exposure objectives across the lake.

The proportionate decreases in total copper concentrations were about the same as for aluminum, cadmium, and zinc, but mean total copper concentrations in Cold Lake remained above the Tier II chronic exposure objective (0.00598 mg/L) at all stations, and above the Tier II acute exposure objective (0.00857 mg/L) at CL2, CL3, and CL4 (Table 11). This is an improvement compared to 2008, when the acute objective was exceeded across Cold Lake, but not as large an improvement as seen in aluminum, cadmium, or zinc. The reason for this difference is not clear. Copper loading was not proportionately greater than for the other three metals, and the resulting concentrations in the Cold Lake sediments also weren't proportionately greater (Tetra Tech WEI 2016).

Total and dissolved iron loading to Cold Lake in the discharge from Camp Lake have been substantially reduced by the reclamation project, by about 79% (total) to 85% (dissolved) (Table 10). Total iron concentrations in Cold Lake water have decreased in response, but only by 38 to 49% (Table 11). Dissolved iron concentrations at CL2, both near surface and near bottom, and at CL3 (near surface) similarly decreased by 46 to 57% but did not change at all at CL3 (near bottom) (Table 12). Mean dissolved iron concentrations at CL4, CL5, and CL6 in 2021 increased,

compared to 2008, by 35 (CL4) to 333% (CL5) in the near-surface samples and by 21 (CL6) to 402% (CL5) in the near-bottom samples.

Iron is the only key metal for which the resulting concentrations in the dissolved and total fractions in Cold Lake were not a full reflection of the loading reductions in the Camp Lake discharge. This points to another source of iron to the Cold Lake water column, and the likely source is the historical accumulation of iron in Cold Lake sediments. Cold Lake received considerable iron loading over the decades of uncontrolled ARD discharges from the Sherridon mine site, such that, by September 2008, iron concentrations in sediments at stations CL2, CL3, and CL4 represented 25 to 28% of the total sediment mass (Tetra Tech WEI 2016). In comparison, sediment iron concentrations in an area of Kississing Lake upstream of any influence from the Camp Lake discharge were just 3.5% in the same study. Iron is released from lake sediments under oxygen depleted conditions, as typically develop in the lake hypolimnion during summer thermal stratification or near bottom under winter ice cover (Wetzel 2001).

Table 10. Comparison of key parameter concentrations in the Camp Lake discharge before (2008) and after (2021) reclamation.

Parameter	Units	Fraction	2008	2021 (22 samples)			
				Mean	Max	Min	% Change
Aluminum	mg/L	Total	1.47	0.10	0.21	0.060	-93%
		Dissolved	1.43	0.043	0.068	0.029	-97%
Cadmium	mg/L	Total	0.00178	0.00044	0.00094	0.00025	-75%
		Dissolved	0.00174	0.00035	0.00071	0.00022	-80%
Copper	mg/L	Total	0.149	0.020	0.042	0.0097	-86%
		Dissolved	0.153	0.016	0.028	0.0092	-90%
Iron	mg/L	Total	21.0	4.5	8.1	0.55	-79%
		Dissolved	20.0	3.0	5.7	0.34	-85%
Zinc	mg/L	Total	0.710	0.130	0.30	0.077	-82%
		Dissolved	0.698	0.108	0.25	0.069	-85%
pH	pH units	N/A	3.4	7.0	7.2	6.6	N/A

Table 11. Cold Lake Water Quality (key metals, total fraction mg/L) – Comparison between September 2008 and the 2021 open water season. % change calculated using the 2021 Mean. Values in boldface exceed the applicable MWQSOG Tier II chronic exposure objective or the MWQSOG Tier III guideline (aluminum, iron). Values in boldface italics exceed the applicable MWQSOG Tier II acute exposure objective.

Parameter	Year		CL2 (sfc)	CL2 (btm)	CL3 (sfc)	CL3 (btm)	CL4 (sfc)	CL4 (btm)	CL5 (sfc)	CL5 (btm)	CL6 (sfc)	CL6 (btm)
Aluminum	**2021**	**Mean**	0.084	0.082	0.080	0.081	0.082	0.090	0.082	0.094	0.077	0.068
		Max	0.15	0.13	0.12	0.13	0.12	0.11	0.096	0.290	0.098	0.096
		Min	0.065	0.058	0.055	0.058	0.062	0.062	0.054	0.065	0.054	0.045
	2008	**September**	**0.390**	**0.379**	**0.376**	**0.361**	**0.314**	**0.271**	**0.228**	**0.232**	0.0808	0.0735
		% Change	**-78%**	**-78%**	**-79%**	**-77%**	**-74%**	**-67%**	**-64%**	**-59%**	**-5%**	**-7%**
Cadmium	**2021**	**Mean**	0.000157	0.000146	0.000173	0.000166	0.000118	0.000128	0.000100	0.000097	0.000165	0.000061
		Max	0.00027	0.00026	0.00066	0.00053	0.00022	0.00024	0.00019	0.00015	0.00061	0.000094
		Min	0.000071	0.000053	0.000048	0.000048	0.000043	0.000063	0.000041	0.000053	0.000041	0.000032
	2008	**September**	***0.00073***	***0.000746***	***0.00076***	***0.000722***	***0.000675***	***0.00063***	***0.00057***	***0.000564***	***0.000217***	***0.000216***
		% Change	**-78%**	**-80%**	**-77%**	**-77%**	**-83%**	**-80%**	**-82%**	**-83%**	**-24%**	**-72%**
Copper	**2021**	**Mean**	***0.0108***	***0.0102***	***0.0119***	***0.0111***	***0.0090***	***0.0094***	**0.0085**	**0.0086**	**0.0073**	**0.0063**
		Max	0.015	0.015	0.031	0.025	0.013	0.012	0.013	0.012	0.011	0.0085
		Min	0.0081	0.0083	0.0078	0.0070	0.0070	0.0076	0.0055	0.0070	0.0058	0.0037
	2008	**September**	***0.0455***	***0.0453***	***0.0459***	***0.0444***	***0.0401***	***0.0373***	***0.0324***	***0.0319***	***0.013***	***0.0125***
		% Change	**-76%**	**-77%**	**-74%**	**-75%**	**-78%**	**-75%**	**-74%**	**-73%**	**-44%**	**-50%**
Iron	**2021**	**Mean**	**0.84**	**0.92**	**1.14**	**0.96**	**0.68**	**0.81**	**0.62**	**0.71**	**0.46**	**0.40**
		Max	1.5	1.4	4.0	1.4	1.1	1.1	1.0	0.95	0.87	0.46
		Min	0.58	0.68	0.44	0.40	0.40	0.56	0.33	0.53	0.31	0.33
	2008	**September**	**1.58**	**1.77**	**1.75**	**1.62**	**1.34**	**1.19**	**0.989**	**1.00**	**0.543**	**0.522**
		% Change	**-49%**	**-48%**	**-35%**	**-40%**	**-49%**	**-32%**	**-38%**	**-29%**	**-14%**	**-23%**
Zinc	**2021**	**Mean**	0.055	0.061	0.061	0.056	0.042	0.045	0.037	0.038	0.036	0.028
		Max	0.094	0.098	0.220	0.170	0.084	0.072	0.078	0.059	0.079	0.054
		Min	0.025	0.032	0.020	0.022	0.021	0.021	0.018	0.020	0.017	0.014
	2008	**September**	***0.287***	***0.285***	***0.291***	***0.283***	***0.262***	***0.248***	***0.224***	***0.220***	***0.0975***	***0.0944***
		% Change	**-81%**	**-78%**	**-79%**	**-80%**	**-84%**	**-82%**	**-83%**	**-83%**	**-63%**	**-71%**

Table 12. Cold Lake Water Quality (key metals, dissolved fraction mg/L) – Comparison between September 2008 and the 2021 open water season. % change calculated using the 2021 Mean.

Parameter	Year		CL2 (sfc)	CL2 (btm)	CL3 (sfc)	CL3 (btm)	CL4 (sfc)	CL4 (btm)	CL5 (sfc)	CL5 (btm)	CL6 (sfc)	CL6 (btm)
Aluminum	**2021**	**Mean**	0.044	0.049	0.044	0.044	0.047	0.044	0.040	0.038	0.033	0.033
		Max	0.056	0.068	0.061	0.064	0.063	0.048	0.050	0.047	0.042	0.044
		Min	0.035	0.034	0.027	0.031	0.030	0.039	0.032	0.033	0.026	0.025
	2008	**September**	0.368	0.346	0.401	0.365	0.301	0.273	0.196	0.196	0.0435	0.0416
		% Change	**-88%**	**-86%**	**-89%**	**-88%**	**-84%**	**-84%**	**-80%**	**-81%**	**-24%**	**-21%**
Cadmium	**2021**	**Mean**	0.00012	0.00012	0.00014	0.00013	0.000093	0.00010	0.000082	0.000077	0.000063	0.000051
		Max	0.00023	0.00022	0.00045	0.00047	0.00018	0.00017	0.00016	0.00012	0.00012	0.000070
		Min	0.000039	0.000042	0.000032	0.000039	0.000035	0.000032	0.000029	0.000035	0.000025	0.000029
	2008	**September**	0.000718	0.000691	0.000673	0.000669	0.000626	0.000592	0.000524	0.000520	0.000185	0.000178
		% Change	**-83%**	**-83%**	**-79%**	**-81%**	**-85%**	**-83%**	**-84%**	**-85%**	**-66%**	**-71%**
Copper	**2021**	**Mean**	0.0096	0.010	0.0099	0.0095	0.0078	0.0084	0.0074	0.0074	0.0063	0.0054
		Max	0.013	0.014	0.021	0.022	0.012	0.010	0.011	0.0092	0.0091	0.0062
		Min	0.0071	0.0071	0.0064	0.0068	0.0057	0.0070	0.0045	0.0059	0.0050	0.0030
	2008	**September**	0.0392	0.0388	0.0396	0.0380	0.0343	0.0317	0.0271	0.0267	0.0108	0.0107
		% Change	**-75%**	**-74%**	**-75%**	**-75%**	**-77%**	**-74%**	**-73%**	**-72%**	**-42%**	**-50%**
Iron	**2021**	**Mean**	0.58	0.66	0.85	0.79	0.49	0.54	0.39	0.49	0.29	0.26
		Max	0.82	0.85	3.0	3.1	0.63	0.94	0.53	0.95	0.42	0.37
		Min	0.34	0.53	0.27	0.29	0.33	0.33	0.26	0.32	0.19	0.21
	2008	**September**	1.35	1.23	1.33	0.779	0.362	0.216	0.117	0.122	0.206	0.214
		% Change	**-57%**	**-46%**	**-46%**	**+1%**	**+35%**	**+250%**	**+333%**	**+402%**	**+41%**	**+21%**
Zinc	**2021**	**Mean**	0.049	0.047	0.051	0.047	0.036	0.039	0.032	0.031	0.027	0.019
		Max	0.083	0.091	0.16	0.18	0.066	0.070	0.063	0.049	0.049	0.028
		Min	0.017	0.017	0.015	0.017	0.014	0.016	0.012	0.012	0.0097	0.0077
	2008	**September**	0.279	0.274	0.277	0.273	0.249	0.239	0.215	0.211	0.0871	0.0849
		% Change	**-82%**	**-83%**	**-82%**	**-83%**	**-86%**	**-84%**	**-85%**	**-85%**	**-69%**	**-78%**

4.0 Conclusions

Sherlett Creek flow was returned through Camp Lake in August 2018, with 2021 representing the third full year of this operating regime. For the third consecutive year, Sherlett Creek provided sufficient alkalinity to carry the lake through the entire year without requiring a lime treatment, and this was the case despite the low creek inflows in August and negligible flows from September through to at least mid-March 2022. Camp Lake pH closely tracked the pH of Sherlett Creek, with no late summer development of acidic conditions.

The project area has experienced a wide range of precipitation and runoff conditions over the past three years – the April through September period of 2020 was the wettest of the past decade, while the same period in 2021 was the driest of the past decade. The resulting extreme low flows on Sherlett Creek enabled examination of how water quality in Camp Lake responds to the low to negligible inflows that occurred in late summer and autumn of 2021. The low Sherlett Creek flows during this period also enabled further examination of water quality in the creek reach between Sherlett lake and Camp Lake and investigation into the possible causes of the elevated metal concentrations that develop in this reach at low open water season flows.

Sherlett Creek

Water quality monitoring on the reach of Sherlett Creek downstream of Sherlett Lake has demonstrated the following:

- Over the past 5 years, total cadmium, copper, and zinc concentrations at SC-1 generally exceeded one or both of the applicable MWQSOG Tier II chronic and acute objectives for protection of aquatic life most of the time during the open water season. This occurred regardless of the precipitation or local runoff conditions, indicating that surface runoff is not primarily responsible.

- The lowest total cadmium, copper, and zinc concentrations at SC-1 occurred in winter, indicating frozen conditions limit the inflow of water carrying cadmium, copper, and zinc.

- Total cadmium, copper, and zinc concentrations at stations SC-3, SC-2, and SC-1 were higher than at stations SC-4, SC-5, and SC-6 on all open water sampling dates when compared in 2021.

- Total cadmium, copper, and zinc concentrations at SC-1 were below the applicable MWQSOG Tier II chronic exposure objectives on February 1 but were still 2 to 10 times higher than at SC-6, upstream.

- The consistent occurrence of higher cadmium, copper, and zinc concentrations at and downstream of SC-3 is indicative of a source entering the creek between SC-4 and SC-3.

- The creek passes adjacent to the former East Mine Workings, located south of the creek, between stations SC-4 and SC-2, suggesting the workings may be the source, or at least a source of the metal contamination.

- The creek also passes over the Sherridon mineral deposit through this same reach; direct contact with the mineralisation, or groundwater flow from the vicinity of the deposit, may also be a source.

- The outfall of the sewage treatment plant discharges to the north side of the creek downstream of SC-4. Although the treated sewage is unlikely to be a significant contributor of cadmium, copper, or zinc, the granular backfill in the trench may have created a preferential flow path for contaminated groundwater to enter the creek. Given the project setting, and the historical use of mine waste as granular construction material, the trench backfill itself may be a source of metal contamination. The plant discharge should be assessed as a contributing factor; for example, residual aluminum originating from alum flocculant may contribute to the aluminum load in the creek.

- Surface runoff appears to be a minor contributor of metal contamination to the creek. This is indicated by the absence of a large spring pulse of metal contamination during spring runoff, by the very short-term metal peaks that follow heavy rainfall events, and by the occurrence of higher metal concentrations at SC-1, SC-2, and SC-3 in the effective absence of surface runoff, as occurred in summer/fall 2021.

- Multi-sample transects across the creek on 22 August 2021 found the highest concentrations of cadmium, copper, and zinc adjacent to the north bank of the creek at SC-2 and SC-3, with concentrations declining from north to south across the creek by factors of 3 to 10, indicating there is a source of the metals entering the creek at or near the north bank between SC-4 and SC-3. This finding does not rule out the East Mine Workings as a source but, if the workings are responsible, the flow path remains to be defined. Cross-section sampling should be repeated to confirm this finding.

- Short-term spikes in cadmium, copper, and zinc concentrations occur in direct response to heavy rainfall events, indicating surface runoff is responsible for delivering the metals to the creek during these events.

- Considerable increases of cadmium and zinc, and lesser increases of copper, develop during extreme low flow periods, generally in the absence of local surface runoff to the creek.

- Considering all the above evidence, the primary source of metal contamination to Sherlett Creek appears to be a sub-surface source that enters the creek downstream of station SC-4. This could be an inflow of metal-contaminated groundwater or direct

contact of the creek flow with a mineralised zone.

- A single, mid-channel sample adequately characterises water quality at SC-1. A single sample is not adequate at either SC-2 or SC-3 because of the substantial north-south variation in concentrations across the channel at these stations.

- The elevated cadmium, copper, and zinc concentrations in Sherlett Creek are not a concern for recreational water users, concentrations are well within the Guidelines for Canadian Recreational Water Quality and the Guidelines for Canadian Drinking Water Quality.

- The prevalent cadmium, copper, and zinc concentrations, consistently exceeding the Tier II objectives in Sherlett Creek during the open water season are a direct concern for resident aquatic life in the creek. Fish are seasonal users of the creek, moving into the creek from Cold Lake in the spring freshet and then returning to the lake as freshet passes and before any very low flow conditions develop later in the summer. This is a typical pattern of local stream use by fish in northern Manitoba that likely has developed in part because of the uncertainty of flows being maintained throughout the open water season. Seasonal use of Sherlett Creek by fish also minimizes their exposure to metal concentrations in the creek and prevents their exposure to the even higher metal concentrations that can develop at low flows, as seen in 2021. The extent to which the seasonal and resident aquatic life in Sherlett Creek below Sherlett Lake may be affected by the metal concentrations in this reach has not been investigated.

Camp Lake

The 2021 open water season was the first in which the Sherlett Creek inflow had a predominant effect on the concentrations of metals (aluminum, cadmium, copper, and zinc) in Camp Lake and this influence was related to both flow (water quantity) and water quality. Aside from spring runoff, there were no heavy rainfall/runoff events over the open water season.

In general, the highest metal concentrations of the open water season occurred at the beginning of June, shortly following ice-out. Creek flows also were the highest at the beginning of June and, based on the decrease in Camp Lake level, flows decreased continually from the beginning of June through to early October – by early July flow was lower than at any time in the 2020 open water season, and by early August flow was lower than at any time in the 2019 open water season.

Metal concentrations in Camp Lake decreased continually from the beginning of June through to early August. These decreases appear related primarily to the flushing effect of the Sherlett Creek flow, indicating that flushing greatly exceeded contributions of metals from any sources either within the lake or in the local watershed during this period. The declines stopped around early to mid-August either due to insufficient Sherlett Creek flow to overcome the minor residual local sources of metals to the lake (Al, Cd, and Zn) or, in the case of copper, to a

combination of insufficient flow and higher metal concentrations in the inflowing creek. The role of insufficient flow is strongly implicated by the common timing of the ends in the initial declines for all four metals. Creek flows continued declining though August and were negligible from the end of August 2021 past 18 March 2022.

The elevated cadmium and zinc concentrations that developed in Sherlett Creek in September and October are not implicated in the stalled declines in Camp Lake – by the time these increases occurred, inflows from Sherlett Creek were too low to have a material effect on concentrations in the lake. However, by mid-July, total copper concentrations in Sherlett Creek were as high as, or occasionally higher than in the South, Central, and North basins of Camp Lake and appear to have contributed to the end of the early season decline of copper concentrations and contributed to higher seasonal minimum concentrations than would otherwise have occurred in these basins of Camp Lake.

Concentrations of both total cadmium and total zinc, at the open water seasonal minima in early August 2021, were lower in all basins of Camp Lake than have occurred since Sherlett Creek flow was returned to Camp Lake in 2018. Although construction was not quite complete in August, the monitoring results provide a clear indication of continued improvement in Camp Lake water quality. The abrupt halt of the declines of all four metals implies that greater improvements may have occurred had even modest flows continued through the open water season. This hypothesis can be tested in 2022 provided higher streamflows occur.

Concentrations of all metals slowly increased in all lake basins from the summer minimum through to the end of the open water season, reflecting the continuing small diffuse sources within the local watershed that weren't balanced by the negligible flows. Construction activity adjacent to the East basin also appeared to contribute to higher metal concentrations than in other parts of the lake beginning in mid-August. Since 2018, construction activity has largely been focussed on the East basin. With construction now complete, water quality in the East basin should become more similar to that in the other lake basins.

Cold Lake

Cold Lake water quality continues to reflect the effects of the historical discharge of mine-influenced water from as early as 1927 up to 2009, when reclamation project construction was initiated, and the discharge was discontinued. All of total iron, aluminum, cadmium, copper, and zinc occur at elevated background concentrations in Cold Lake, in some cases at concentrations exceeding the applicable MWQSOG Tier II objectives or Tier III guidelines, and this is most evident at stations CL2, CL3, and CL4 in the central portion of the Cold Lake arm.

The Camp Lake discharge generally had minor effects on water quality in Cold Lake outside the mixing zone. pH, alkalinity, turbidity, and TSS concentrations were not affected at all. Total aluminum and total cadmium concentrations remained within the respective background concentrations throughout the year. Total zinc concentrations were slightly elevated above background at CL2 and CL4 on June 8 but were within the background range on all other dates.

Total copper concentrations also were slightly elevated in June, although for a slightly longer period, with elevated concentrations above background at CL2, CL4, and CL5 on both June 8 and 28. Total copper concentrations were at or below background at all stations over the remainder of the year.

Near-surface total iron concentrations in Cold Lake outside the mixing zone were elevated above background at the beginning of June at all of CL2, CL4, CL5, and CL6, with concentrations decreasing from 1.5 mg/L at CL2 to 0.87 mg/L at CL6. By the end of June, concentrations at CL6 were within background and concentrations at CL4 and CL5 were near background at 0.64 mg/L. CL2 remained above background at 0.92 mg/L. From July to the end of August, total iron concentrations at all four stations were near (CL2) or within (CL4, CL5, CL6) background. Concentrations increased again in September, exceeding background at CL2 (0.95 mg/L), CL4 (0.78 mg/L), and CL5 (0.72 mg/L) at the end of September and continuing into October at CL4 and CL5. Stations CL2 and CL6 weren't sampled in October.

The early June elevation of iron appears related to the Camp Lake discharge, while the increase in September does not appear to be related to the discharge – there was low discharge in August and negligible to no discharge thereafter in 2021. A more likely cause of the September increase is autumnal mixing. Summer thermal stratification in Cold Lake developed before the first open water sampling date on June 8 and broke down and began breaking down with fall cooling in later August and the water column was fully mixing between by the end of September, enabling water column mixing to the bottom of the lake and entrainment of iron released from the lake sediments under the anoxic conditions that developed at depth near bottom during summer. Near-bottom iron concentrations were within background throughout the open water season, but also typically exceeded near-surface concentrations through the stratified period.

There has been a material change in the partitioning of some metals between the particulate and dissolved phases in each of 2020 and 2021. Zinc and cadmium typically occur predominantly in the dissolved phase, and that partitioning hasn't changed. However, iron, aluminum, and copper have all shifted toward occurring predominantly in the dissolved phase. The shift was greatest for iron, with the dissolved fraction increasing from 23% to 66-83% of the total. The proportion of aluminum as dissolved increased from 33% to 57%, and the proportion of copper as dissolved increased from 50% to 77-82%. Dissolved/particulate partitioning affects how the metals behave, particularly following discharge to Cold Lake. Particulates settle quickly whereas dissolved metals are primarily attenuated by dilution. All of aluminum, copper, and iron should occur primarily in the particulate phase, based on the circumneutral water chemistry. Dissolved organic matter can adsorb these metals and keep a greater proportion in the dissolved phase than would be predicted by water quality – analyses of dissolved organic carbon (DOC) in 2021 demonstrated abundant dissolved organic matter is present in Camp Lake, although it is not known if DOC concentrations increased between 2019 and 2020/2021.

The reclamation project has substantially reduced loading of key metals to Cold Lake, by 75% (Cd) to 93% (Al) since 2008, just before project construction was initiated. Similar reductions of

water column metal concentrations have occurred for all parameters with the exception of total Fe, which has decreased by only 38-49% compared to a 79% decrease in the discharge. The likely explanation for this discrepancy is iron release from the lake sediments given the large pool of iron in Cold Lake sediments – accounting for 25-28% of the sediment dry mass at stations CL2, CL3, and CL4 – iron is released from lake sediments under oxygen depleted conditions, as typically develop in the lake hypolimnion during summer thermal stratification.

As a result of the substantially reduced key metal concentrations in the Camp Lake discharge, the mean concentrations of total aluminum, cadmium, and zinc in 2021 were generally below the applicable MWQSOG Tier II chronic exposure objectives (cadmium and zinc) or Tier III guideline (aluminum). This is a substantial improvement compared to 2008, when total aluminum concentrations exceeded the Tier III guideline across Cold Lake and both total cadmium and total zinc exceeded the applicable Tier II acute exposure objectives across the lake.

The proportionate decreases in total copper concentrations were about the same as for aluminum, cadmium, and zinc, but mean total copper concentrations in Cold Lake remained above the Tier II chronic exposure objective at all stations, and above the Tier II acute exposure objective at CL2, CL3, and CL4. This is an improvement compared to 2008, when the acute objective was exceeded across Cold Lake, but not as large an improvement as seen in aluminum, cadmium, or zinc. The reason for this difference is not clear. Copper loading was not proportionately greater than for the other three metals, and the resulting concentrations in the Cold Lake sediments also weren't proportionately greater.

Further reductions in the water column concentrations of Al, Cd, Cu, and Zn in Cold Lake should be expected to occur as concentrations in Camp Lake continue to decrease. Reductions in water column iron concentrations may not accompany reductions in loading from Camp Lake due to continuing release from the Cold Lake sediments.

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Appendix A – Field Data

Note: Shaded values in the Cold Lake tables approximate the depth of the hypolimnion and indicate the layer of the lake that is isolated by summer thermal stratification. Turbidity values in red indicate icing in the turbidity cell, resulting in negative values.

Table A.1. Camp Lake Discharge - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	--	--	6.57	0.25	1.0	10.34	99	6.57	1.1	118
01-Jun-21	--	--	7.11	0.25	13.8	10.15	250	6.82	11.8	209
08-Jun-21	--	--	7.09	0.25	17.8	8.95	184	7.08	7.5	175
16-Jun-21	--	--	7.12	0.25	19.0	8.78	180	6.86	4.3	279
21-Jun-21	--	--	7.13	0.25	16.3	9.12	46	7.46	1.2	189
28-Jun-21	--	--	6.90	0.25	21.3	8.50	160	7.03	3.6	189
05-Jul-21	--	--	7.02	0.25	21.8	8.99	157	7.30	1.9	192
12-Jul-21	--	--	7.14	0.25	23.9	7.87	164	7.12	1.6	196
19-Jul-21	--	--	6.87	0.25	20.2	8.26	189	6.95	2.4	139
26-Jul-21	--	--	6.92	0.25	19.0	8.56	191	7.02	3.2	128
01-Aug-21	--	--	6.96	0.25	20.7	8.47	203	6.92	1.1	131
09-Aug-21	--	--	--	0.25	20.2	8.09	228	6.83	3.4	81
16-Aug-21	--	--	7.19	0.25	17.4	0.81	190	6.62	8.6	139
23-Aug-21	--	--	7.03	0.25	15.2	9.20	274	6.84	8.5	110
30-Aug-21	--	--	7.15	0.25	16.9	9.04	253	6.78	4.6	117
06-Sep-21	--	--	6.93	0.25	16.4	8.83	288	6.95	8.9	139
13-Sep-21	--	--	6.85	0.25	13.5	9.93	323	6.67	11.2	149
20-Sep-21	--	--	6.80	0.25	11.7	9.85	332	6.45	13.2	145
27-Sep-21	--	--	6.95	0.25	12.9	9.68	336	6.83	17.0	202
13-Oct-21	--	--	6.90	0.25	8.5	11.31	383	6.57	14.3	182

Table A.2. Camp Lake Station NB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	--	--	6.76	0.25	0.1	10.94	87	6.74	0.6	183
01-Jun-21	--	--	7.09	0.25	14.0	10.17	201	6.78	11.6	211
08-Jun-21	--	0.90	7.13	0.25	17.2	9.04	182	7.04	7.5	167
				1.00	17.1	9.03	182	7.04	7.5	167
				2.00	16.7	9.00	181	7.04	7.4	168
16-Jun-21	--	--	7.14	0.25	19.0	8.76	177	7.00	4.1	232
				1.00	19.0	8.67	177	6.96	4.0	233
				2.00	19.0	8.66	177	6.95	4.0	233
21-Jun-21	--	--	7.07	0.25	16.3	9.05	131	7.23	2.9	203
				1.00	16.3	9.02	131	7.21	2.9	203
				2.00	16.2	8.96	132	7.18	3.0	203
28-Jun-21	--	1.80	6.91	0.25	21.3	8.76	159	7.07	5.6	193
				1.00	21.3	8.71	159	7.05	2.0	192
				2.00	20.9	8.68	159	7.04	2.1	192

Table A.2. Continued. Camp Lake Station NB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
05-Jul-21	--	1.90	7.11	0.25	21.8	7.79	157	7.19	1.9	193
				1.00	21.8	7.77	157	7.18	1.8	193
12-Jul-21	2.0	1.80	7.26	0.25	24.5	7.82	159	7.24	1.6	190
				1.00	24.3	7.81	159	7.27	1.6	155
19-Jul-21	--	1.20	7.02	0.25	19.7	8.50	184	6.97	2.6	133
				1.00	19.6	8.31	184	6.97	2.5	132
26-Jul-21	--	1.40	6.96	0.25	19.5	8.60	191	7.07	7.6	108
				1.00	19.5	8.53	191	7.06	2.4	109
01-Aug-21	--	1.20	--	0.25	21.5	8.40	203	6.92	0.8	125
				1.00	21.3	8.26	203	6.91	1.1	123
09-Aug-21	--	1.40	6.92	0.25	20.3	8.39	226	6.82	3.6	75
				1.00	20.2	8.22	226	6.82	3.8	74
16-Aug-21	--	0.70	7.28	0.25	19.2	8.66	188	6.57	8.2	133
				1.00	19.2	8.56	188	6.57	8.2	133
23-Aug-21	--	1.00	7.24	0.25	15.6	9.00	269	6.90	7.7	111
				1.00	15.6	8.95	269	6.88	7.7	111
30-Aug-21	--	1.00	7.07	0.25	16.5	9.11	251	6.74	4.5	112
				1.00	16.1	9.09	251	6.74	4.5	113
06-Sep-21	--	0.80	6.92	0.25	16.0	8.94	285	6.95	8.8	135
				1.00	16.0	8.86	286	6.92	8.8	136
13-Sep-21	--	0.70	6.67	0.25	13.9	9.32	315	6.67	10.2	127
				1.00	14.0	9.30	315	6.66	10.2	126
20-Sep-21	--	0.70	6.77	0.25	11.8	10.17	328	6.44	13.0	154
				1.00	11.8	9.92	329	6.44	13.0	152
27-Sep-21	1.3	0.60	6.93	0.25	12.8	9.79	332	6.81	13.6	180
				1.00	12.5	9.74	333	6.79	14.2	171
13-Oct-21	--	0.60	6.86	0.25	8.7	11.05	380	6.59	17.1	161
				1.00	8.7	10.78	380	6.57	17.0	160
21-Oct-21	--	0.50	6.73	0.25	4.6	11.74	311	6.59	19.0	160
				1.00	4.6	11.66	311	6.54	19.3	161
18-Mar-22	1.7	--	--	0.25	0.7	12.77	372	6.66	15.6	135
				1.00	2.0	10.95	422	6.50	17.8	142

Table A.3. Camp Lake Station NB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	1.2	--	6.92	0.25	0.5	10.83	87	6.73	0.9	188
01-Jun-21	--	0.60	7.05	0.25	13.2	10.22	185	6.87	12.1	229
				1.00	14.1	10.19	201	6.79	11.6	212
08-Jun-21	--	1.00	7.16	0.25	17.2	9.08	165	7.09	6.5	163
				1.00	17.0	9.06	167	7.09	6.7	163
16-Jun-21	--	1.00	7.27	0.25	18.9	8.74	162	7.00	4.1	241
				1.00	19.0	8.72	162	7.00	3.8	240
21-Jun-21	--	1.10	6.98	0.25	15.6	8.97	116	7.17	2.8	211
				1.00	15.9	8.92	116	7.13	2.7	208
28-Jun-21	--	1.80	6.91	0.25	21.1	9.01	151	7.01	2.1	190
				1.00	20.9	8.90	151	6.99	2.1	187
05-Jul-21	--	1.80	7.17	0.25	20.9	7.89	153	7.22	2.2	202
				1.00	21.0	7.83	153	7.20	2.2	202
12-Jul-21	1.3	1.30	7.21	0.25	23.7	7.88	157	7.19	1.7	175
				1.00	23.5	7.83	157	7.17	3.4	171
19-Jul-21	--	1.20	7.10	0.25	19.1	8.33	171	7.01	2.5	125
				1.00	19.0	8.31	172	7.00	2.6	125
26-Jul-21	--	1.20	7.02	0.25	19.6	8.33	185	7.07	2.3	116
				1.00	19.6	8.32	185	7.06	2.3	117
01-Aug-21	--	1.20	7.03	0.25	21.7	8.28	197	6.96	1.3	112
09-Aug-21	--	1.20	7.09	0.25	20.2	8.01	220	6.91	3.5	63
				1.00	20.0	7.98	221	6.89	8.6	64
16-Aug-21	--	0.70	7.40	0.25	19.2	8.52	188	6.59	8.0	114
				1.00	19.2	8.50	188	6.58	8.1	115
23-Aug-21	--	1.00	7.22	0.25	15.1	9.00	265	6.75	7.6	104
30-Aug-21	--	0.80	7.19	0.25	17.3	9.25	248	6.67	4.3	127
				0.75	17.2	9.09	249	6.69	4.4	125
06-Sep-21	--	0.90	6.98	0.25	15.7	8.99	284	6.97	8.6	144
				1.00	15.6	8.93	283	6.94	10.2	145
13-Sep-21	--	0.80	6.99	0.25	13.6	9.53	308	6.68	9.6	124
20-Sep-21	--	0.70	7.01	0.25	11.6	9.82	324	6.53	12.4	141
				1.00	11.7	9.78	325	6.51	12.5	141
27-Sep-21	1.4	0.70	7.01	0.25	12.4	9.81	328	6.89	13.2	215
13-Oct-21	--	0.60	6.92	0.25	8.2	10.69	376	6.52	16.3	166
18-Mar-22	1.1	--	--	0.25	0.4	10.98	377	6.53	16.4	149
				1.00	0.8	10.91	374	6.51	16.6	150

Table A.4. Camp Lake Station CB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	2.9	--	6.65	0.25	0.1	11.23	72	6.82	0.4	48
				1.00	1.5	7.64	303	6.71	0.7	72
				2.00	4.4	3.65	472	6.72	7.3	78
01-Jun-21	--	0.80	7.00	0.25	13.4	10.23	173	6.60	11.1	129
				1.00	13.3	10.22	173	6.60	11.1	129
				2.00	11.5	10.35	183	6.60	11.6	130
08-Jun-21	--	0.80	7.17	0.25	17.2	9.08	151	7.09	6.0	110
				1.00	17.1	9.06	150	7.09	5.9	111
				2.00	16.8	9.03	147	7.09	5.8	112
16-Jun-21	--	1.20	7.24	0.25	19.0	8.68	157	7.03	3.8	178
				1.00	19.0	8.68	156	7.03	3.8	178
				2.00	18.9	8.67	160	7.03	3.7	178
21-Jun-21	--	1.20	6.92	0.25	16.1	8.89	106	7.10	2.9	203
				1.00	16.1	8.87	106	7.09	2.8	203
				2.00	16.1	8.86	107	7.08	2.8	203
28-Jun-21	--	1.30	6.91	0.25	21.2	8.61	131	7.21	1.9	202
				1.00	20.7	8.56	130	7.17	2.0	201
				2.00	20.6	8.56	130	7.16	2.1	201
05-Jul-21	--	2.00	7.06	0.25	21.2	8.22	144	7.15	5.3	180
				1.00	21.3	8.11	144	7.14	2.0	181
				2.00	21.3	8.02	145	7.13	2.0	181
				3.00	21.3	7.56	147	7.11	1.9	182
12-Jul-21	1.4	1.80	7.29	0.25	23.6	7.83	144	7.23	1.7	170
				1.00	23.5	7.77	144	7.20	1.8	180
				2.00	21.3	7.24	148	6.86	2.1	198
19-Jul-21	--	1.40	6.93	0.25	19.7	8.12	157	7.01	2.6	86
				1.00	19.7	8.10	157	7.00	2.6	86
				2.00	19.6	8.08	157	7.00	2.6	87
				3.00	19.1	8.09	159	7.00	2.6	87
26-Jul-21	--	1.20	6.83	0.25	19.3	8.36	165	6.97	2.7	149
				1.00	19.3	8.30	165	6.96	2.7	149
				2.00	19.3	8.25	165	6.94	2.6	149
				3.00	19.3	8.23	165	6.93	2.6	150
01-Aug-21	--	1.20	6.81	0.25	21.3	8.27	179	6.82	1.3	86
				1.00	21.3	8.24	179	6.82	1.3	85
				2.00	21.2	8.20	179	6.81	1.4	85
09-Aug-21	--	1.10	6.95	0.25	20.4	7.71	192	6.75	3.9	64
				1.00	20.2	7.68	193	6.74	3.9	64
				2.00	20.0	7.62	197	6.58	4.7	56
16-Aug-21	--	0.80	7.01	0.25	18.8	8.63	162	6.60	9.0	175
				1.00	18.8	8.60	163	6.59	9.0	175
				2.00	17.5	8.55	167	6.59	9.2	175
				3.00	16.5	8.30	169	6.58	9.6	175

Table A.4. Continued. Camp Lake Station CB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
23-Aug-21	--	0.70	7.09	0.25	15.5	8.89	238	6.55	8.3	83
				1.00	15.5	8.86	238	6.56	8.3	83
				2.00	15.5	8.84	238	6.57	8.3	84
30-Aug-21	--	1.20	7.03	0.25	16.9	9.00	211	6.53	4.8	80
				1.00	16.3	8.99	218	6.57	4.9	84
				2.00	16.2	8.96	217	6.59	5.2	89
06-Sep-21	--	0.90	6.78	0.25	15.9	8.90	242	6.65	8.8	123
				1.00	15.9	8.84	244	6.66	8.7	126
				2.00	15.8	8.83	245	6.61	8.6	133
13-Sep-21	--	0.80	6.58	0.25	14.1	9.27	269	6.56	11.0	91
				1.00	14.1	9.26	269	6.56	11.0	92
				2.00	14.1	9.25	269	6.56	11.0	93
				3.00	14.1	9.24	269	6.55	11.2	94
20-Sep-21	--	0.60	6.64	0.25	11.8	10.08	282	6.41	13.4	83
				1.00	11.9	9.92	282	6.41	13.4	83
				2.00	11.9	9.83	282	6.41	13.5	83
27-Sep-21	2.5	0.60	6.80	0.25	12.5	9.82	289	6.72	14.9	170
				1.00	12.5	9.83	289	6.71	14.8	171
				2.00	12.4	9.81	289	6.70	14.8	170
13-Oct-21	--	0.50	6.66	0.25	8.8	11.05	326	6.26	19.2	174
				1.00	8.8	10.70	326	6.27	19.1	174
				2.00	8.9	10.57	326	6.26	19.1	173
21-Oct-21	--	0.40	6.47	0.25	5.0	11.57	268	6.53	23.3	133
				1.00	5.0	11.53	268	6.48	23.2	138
				2.00	4.9	11.49	268	6.45	23.1	141
18-Mar-22	--	--	--	0.25	0.6	11.93	363	6.57	17.7	150
				1.00	2.0	11.38	387	6.47	18.1	153
				2.00	3.7	7.54	467	6.35	18.2	151

Table A.5. Camp Lake Station CB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	2.8	--	6.79	0.25	0.1	11.07	68	6.84	0.2	149
				1.00	1.5	9.84	271	6.32	6.0	175
				2.00	4.9	1.06	871	6.11	7.4	93
01-Jun-21	--	0.70	7.02	0.25	13.0	10.19	195	6.67	12.5	139
				1.00	12.5	9.95	195	6.66	12.7	140
				2.00	10.9	10.26	201	6.66	12.9	140
08-Jun-21	--	1.00	7.13	0.25	17.3	9.06	169	7.12	6.7	132
				1.00	17.1	9.05	168	7.11	6.6	132
				2.00	15.4	8.94	183	7.10	7.7	134
				3.00	11.3	8.50	224	6.89	11.2	146

Table A.5. Continued. Camp Lake Station CB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
16-Jun-21	--	1.10	7.16	0.25	19.0	8.72	157	6.99	3.9	191
				1.00	19.0	8.72	157	7.01	3.8	190
				2.00	17.3	8.87	165	7.02	3.8	190
				3.00	13.4	8.15	265	6.57	4.6	212
21-Jun-21	--	1.30	6.97	0.25	15.8	9.41	126	7.25	3.2	236
				1.00	15.9	9.20	127	7.21	3.2	235
				2.00	15.9	9.13	127	7.18	3.2	234
				3.00	15.9	9.08	127	7.16	3.2	218
28-Jun-21	--	1.20	6.44	0.25	20.9	8.61	139	7.24	2.1	211
				1.00	20.7	8.57	138	7.17	2.1	211
				2.00	20.3	8.56	140	7.12	2.2	210
				3.00	17.5	8.47	158	7.09	2.6	211
05-Jul-21	--	1.80	7.04	0.25	21.5	7.79	143	7.05	2.0	196
				1.00	21.5	7.74	143	7.04	1.9	197
				2.00	21.6	7.68	144	7.02	1.9	198
12-Jul-21	2.9	1.90	7.30	0.25	23.7	7.82	148	7.21	1.9	221
				1.00	23.7	7.81	148	7.23	1.9	221
				2.00	23.4	7.82	151	7.20	1.9	221
19-Jul-21	--	1.10	6.83	0.25	18.9	8.15	170	7.00	3.0	123
				1.00	18.6	8.12	170	7.00	3.1	122
				2.00	17.8	8.10	174	6.99	3.1	122
May have touched bottom at 3 m				3.00	17.3	5.74	1407	5.19	8.8	56
26-Jul-21	--	1.10	6.89	0.25	19.4	8.67	171	6.61	5.5	28
				1.00	19.5	8.61	171	6.63	3.5	29
				2.00	19.5	8.49	172	6.65	3.3	30
				3.00	18.9	7.77	177	6.41	3.7	41
01-Aug-21	--	1.10	6.72	0.25	21.5	8.28	186	6.56	1.5	65
				1.00	21.5	8.24	186	6.58	1.5	64
				2.00	21.5	8.21	186	6.60	1.6	64
09-Aug-21	--	1.10	6.97	0.25	19.9	7.86	200	6.70	3.5	40
				1.00	19.8	7.85	200	6.71	3.5	41
				2.00	19.6	7.83	200	6.72	3.6	43
16-Aug-21	--	0.60	6.92	0.25	19.0	8.89	167	5.95	9.2	120
				1.00	19.0	8.77	167	6.00	9.3	120
				2.00	19.0	8.68	167	6.13	9.4	119
23-Aug-21	--	0.70	7.08	0.25	15.0	8.94	237	6.36	8.9	85
				1.00	15.1	8.87	237	6.39	9.0	85
				2.00	15.1	8.81	237	6.40	9.0	86
30-Aug-21	--	0.80	7.07	0.25	16.8	9.04	221	6.62	5.0	86
				1.00	16.6	8.98	219	6.64	5.1	89
				2.00	15.9	8.83	220	6.62	5.4	92

Table A.5. Continued. Camp Lake Station CB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
06-Sep-21	--	0.90	6.86	0.25	15.8	8.99	247	6.77	8.6	119
				1.00	15.6	8.95	248	6.77	8.7	123
				2.00	15.4	8.82	249	6.72	9.4	130
13-Sep-21	--	0.70	6.66	0.25	13.9	9.42	273	6.37	11.1	80
				1.00	13.9	9.38	273	6.39	10.9	81
				2.00	13.9	9.33	272	6.41	10.6	83
				3.00	13.6	9.26	272	6.43	11.3	86
20-Sep-21	--	0.70	6.70	0.25	11.6	10.25	284	6.18	13.3	72
				1.00	11.7	10.10	284	6.19	13.4	73
				2.00	11.7	9.94	284	6.20	13.5	74
27-Sep-21	2.5	0.70	6.87	0.25	12.7	9.73	293	6.71	14.4	167
				1.00	12.3	9.65	293	6.70	14.6	173
				2.00	11.4	9.44	293	6.65	15.9	181
13-Oct-21	--	0.50	6.62	0.25	8.6	10.86	330	6.16	18.8	113
				1.00	8.6	10.59	330	6.18	18.8	117
				2.00	8.6	10.52	329	6.19	18.9	118
18-Mar-22	--	--	--	0.25	0.6	11.86	365	6.50	15.2	123
				1.00	1.3	11.58	371	6.50	16.1	129
				2.00	4.0	3.84	587	6.07	5.0	129

Table A.6. Camp Lake Station SB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	2.9	--	6.49	0.25	0.1	11.17	70	6.80	0.4	71
				1.00	1.9	9.09	255	6.52	3.3	99
				2.00	4.0	2.88	420	6.39	6.2	99
01-Jun-21	--	0.80	7.12	0.25	12.6	10.16	161	6.52	10.6	119
				1.00	12.4	10.15	154	6.57	9.6	118
				2.00	10.9	10.26	152	6.59	9.4	117
08-Jun-21	--	1.00	7.14	0.25	17.4	9.03	150	6.96	6.0	89
				1.00	16.9	9.01	151	6.97	6.0	90
				2.00	16.8	9.00	149	6.98	5.9	91
16-Jun-21	--	1.30	7.28	0.25	18.5	8.82	148	6.90	3.6	166
				1.00	18.5	8.72	148	6.81	5.2	168
				2.00	18.4	8.69	146	6.78	5.3	169
21-Jun-21	--	1.20	7.01	0.25	16.0	8.92	100	7.22	2.8	178
				1.00	16.1	8.83	101	7.16	2.8	176
				2.00	16.1	8.81	101	7.14	2.8	176
28-Jun-21	--	1.30	7.01	0.25	21.3	8.66	116	7.20	1.8	194
				1.00	21.1	8.57	117	7.17	1.8	193
				2.00	20.7	8.52	121	7.16	2.0	193
05-Jul-21	--	2.00	7.07	0.25	21.8	7.97	131	7.18	1.8	208
				1.00	21.8	7.85	131	7.16	1.8	208
				2.00	21.9	7.77	131	7.12	1.8	209
12-Jul-21	2.2	1.80	7.29	0.25	23.5	7.76	141	7.19	1.7	242
				1.00	23.4	7.73	140	7.18	1.8	239
				2.00	21.8	7.12	139	7.06	1.8	240
19-Jul-21	--	1.40	6.98	0.25	19.6	8.02	141	6.87	2.9	65
				1.00	19.5	7.99	142	6.89	2.9	64
				2.00	19.3	7.94	146	6.89	2.8	67
				3.00	18.9	7.89	152	6.89	3.0	62
26-Jul-21	--	1.20	6.85	0.25	19.5	8.23	162	6.97	2.6	173
				1.00	19.5	8.22	162	6.97	2.7	173
				2.00	19.5	8.18	162	6.96	2.7	174
01-Aug-21	--	1.10	6.82	0.25	21.4	8.32	171	6.94	1.5	164
				1.00	21.4	8.20	171	6.93	1.5	164
				2.00	21.4	8.13	172	6.89	1.5	164
09-Aug-21	--	1.10	6.93	0.25	20.4	7.72	189	6.83	3.7	53
				1.00	20.2	7.69	190	6.81	3.8	55
				2.00	20.1	7.68	191	6.80	3.7	56
16-Aug-21	--	0.80	7.04	0.25	19.0	8.83	160	6.83	12.0	214
				1.00	19.0	8.76	160	6.81	11.1	214
				2.00	19.0	8.69	160	6.80	9.0	214
23-Aug-21	--	0.70	7.07	0.25	15.6	8.70	231	6.43	8.6	55
				1.00	15.6	8.66	231	6.44	8.7	56
				2.00	15.5	8.63	231	6.45	8.7	57

Table A.6. Continued. Camp Lake Station SB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
30-Aug-21	--	1.00	7.11	0.25	16.6	8.92	211	6.23	4.9	81
				1.00	16.6	8.94	210	6.39	4.8	84
				2.00	15.9	8.79	211	6.42	5.3	87
06-Sep-21	--	0.80	6.77	0.25	15.7	8.77	240	6.49	8.9	97
				1.00	15.7	8.70	240	6.55	8.8	105
				2.00	15.6	8.68	240	6.55	9.1	109
13-Sep-21	--	0.80	6.56	0.25	14.1	9.29	268	6.40	11.0	58
				1.00	14.1	9.22	269	6.43	11.0	61
				2.00	14.1	9.18	269	6.46	11.0	64
20-Sep-21	--	0.50	6.61	0.25	11.8	10.18	279	6.42	14.1	74
				1.00	11.9	10.03	279	6.41	14.1	74
				2.00	11.9	9.87	279	6.41	14.0	75
27-Sep-21	2.4	0.60	6.74	0.25	12.2	9.74	290	6.61	14.9	157
				1.00	12.2	9.73	290	6.61	14.9	156
				2.00	12.1	9.69	290	6.61	14.8	162
13-Oct-21	--	0.50	6.66	0.25	8.9	10.35	327	6.20	19.3	109
				1.00	8.9	10.27	327	6.21	19.3	111
				2.00	8.9	10.22	327	6.22	19.2	119
21-Oct-21	--	0.50	6.62	0.25	4.8	11.54	268	6.56	24.0	147
				1.00	4.9	11.50	268	6.51	24.1	147
				2.00	4.8	11.45	268	6.46	24.2	147
18-Mar-22	--	--	--	0.25	0.4	10.61	359	6.56	13.5	98
				1.00	2.4	10.46	409	6.47	16.6	106
				2.00	3.8	7.06	460	6.46	16.3	109

Table A.7. Camp Lake Station SB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	4.2	--	6.41	0.25	0.0	10.95	69	6.82	0.5	93
				1.00	1.7	9.12	264	6.55	5.3	107
				2.00	4.7	2.52	482	6.39	7.2	116
01-Jun-21	--	0.80	7.10	0.25	12.5	10.19	157	7.20	10.4	178
				1.00	12.2	10.00	163	7.16	11.0	178
				2.00	10.7	10.25	175	7.12	12.2	179
				3.00	10.5	10.14	174	7.08	13.0	180
08-Jun-21	--	1.00	7.23	0.25	17.1	9.00	156	7.27	6.1	174
				1.00	16.2	8.92	131	7.22	5.0	174
				2.00	16.1	8.90	135	7.20	5.4	175
				3.00	12.0	8.56	178	7.00	9.1	178
16-Jun-21	--	1.30	7.70	0.25	18.2	8.61	134	7.13	3.2	111
				1.00	18.2	8.60	134	7.09	3.2	114
				2.00	18.2	8.59	135	7.06	3.2	116
				3.00	17.9	8.53	142	7.04	3.6	123

Table A.7. Continued. Camp Lake Station SB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
21-Jun-21	--	1.20	7.01	0.25	16.1	8.83	94	7.15	2.7	112
				1.00	16.1	8.78	94	7.11	2.7	113
				2.00	16.1	8.76	95	7.09	2.7	114
				3.00	16.0	8.64	84	7.09	2.4	114
28-Jun-21	--	1.20	6.86	0.25	20.8	8.40	120	7.09	1.8	158
				1.00	20.8	8.38	117	7.07	1.8	159
				2.00	20.4	7.94	106	7.06	1.6	159
				3.00	17.8	7.97	103	7.05	1.7	159
05-Jul-21	--	1.90	7.17	0.25	21.8	7.85	129	7.22	2.0	192
				1.00	21.9	7.71	129	7.15	2.0	193
				2.00	22.0	7.67	130	7.13	1.9	194
				3.00	21.9	7.60	131	7.08	1.9	197
12-Jul-21	2.1	1.90	7.29	0.25	23.4	7.76	135	7.19	1.7	219
				1.00	23.4	7.75	134	7.18	1.7	220
				2.00	23.3	7.71	133	7.16	1.7	221
19-Jul-21	--	1.20	7.05	0.25	19.7	8.04	139	7.28	2.8	138
				1.00	19.6	7.98	139	7.25	2.8	138
				2.00	19.3	7.91	141	7.14	2.8	138
				3.00	18.4	7.69	147	7.10	2.9	136
26-Jul-21	--	1.20	7.15	0.25	19.7	8.73	155	7.22	2.8	177
				1.00	19.7	8.52	156	7.18	2.7	177
				2.00	19.7	8.43	156	7.16	2.7	177
01-Aug-21	--	1.00	6.89	0.25	21.8	8.15	167	7.03	2.4	154
				1.00	21.7	8.14	167	7.00	2.5	155
				2.00	21.6	8.10	168	6.96	2.7	156
09-Aug-21	--	1.20	6.93	0.25	20.1	7.56	184	6.79	4.0	49
				1.00	20.0	7.55	186	6.78	4.1	50
				2.00	19.9	7.55	188	6.77	4.0	51
16-Aug-21	--	0.90	7.10	0.25	19.3	8.48	147	6.90	8.3	200
				1.00	19.3	8.47	147	6.86	8.3	200
				2.00	19.2	8.42	149	6.84	8.8	200
23-Aug-21	--	0.70	7.04	0.25	15.5	8.85	227	6.74	8.7	197
				1.00	15.5	8.82	227	6.71	8.7	197
				2.00	15.5	8.77	228	6.70	8.8	196
				3.00	15.5	8.70	228	6.65	8.8	194
30-Aug-21	--	1.00	7.17	0.25	17.3	8.85	192	6.89	4.5	109
				1.00	16.8	8.85	204	6.81	5.0	113
				2.00	16.4	8.78	204	6.76	5.1	114
				3.00	15.3	8.44	207	6.64	6.0	115
06-Sep-21	--	0.80	7.48	0.25	15.4	8.73	238	6.93	9.0	190
				1.00	15.4	8.70	237	6.86	9.2	189
				2.00	15.3	8.67	236	6.76	9.3	192
				3.00	15.1	8.61	237	6.64	9.4	197

Table A.7. Continued. Camp Lake Station SB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
13-Sep-21	--	0.50	6.84	0.25	13.7	9.61	267	7.09	11.7	165
				1.00	13.7	9.39	267	6.95	11.8	165
				2.00	13.7	9.30	267	6.91	11.8	165
				3.00	13.7	9.24	267	6.89	11.8	164
20-Sep-21	--	0.60	6.76	0.25	12.0	9.57	281	6.41	14.4	69
				1.00	12.0	9.54	281	6.40	14.4	63
				2.00	12.0	9.54	281	6.39	14.4	61
				3.00	12.0	9.52	281	6.37	14.4	53
27-Sep-21	2.9	0.60	6.66	0.25	11.7	9.65	287	6.57	16.1	165
				1.00	11.7	9.62	286	6.55	16.0	155
				2.00	11.7	9.61	287	6.53	16.0	142
13-Oct-21	--	0.50	6.65	0.25	8.8	10.48	325	6.84	19.6	150
				1.00	8.8	10.42	325	6.71	19.6	40
				2.00	8.8	10.37	325	6.69	19.6	137
				3.00	8.8	10.33	326	6.67	19.6	130
18-Mar-22	--	--	--	0.25	0.7	9.93	339	6.89	16.8	91
				1.00	2.6	10.75	405	6.56	16.8	104
				2.00	5.0	3.44	528	6.24	17.0	111

Table A.8. Camp Lake Station EB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	1.9	--	7.36	0.25	0.3	11.43	129	7.05	1.1	175
01-Jun-21	--	0.60	7.15	0.25	14.0	10.13	248	6.81	13.0	208
				1.00	13.9	10.13	154	6.79	12.9	208
08-Jun-21	--	0.80	7.06	0.25	17.3	8.90	245	6.93	10.0	140
				1.00	17.1	8.84	244	6.92	9.8	141
16-Jun-21	--	0.90	7.08	0.25	19.4	8.64	226	6.72	6.6	217
				1.00	19.4	8.64	226	6.76	6.5	217
21-Jun-21	--	1.30	6.92	0.25	15.7	9.39	171	7.11	4.2	227
				1.00	15.7	9.36	171	7.10	4.2	226
28-Jun-21	--	1.10	6.81	0.25	20.7	8.87	228	6.61	3.2	142
				1.00	20.7	8.88	228	6.67	3.2	141
05-Jul-21	--	1.80	7.00	0.25	21.5	7.89	216	6.92	2.5	208
				1.00	21.6	7.87	216	6.92	2.4	208
12-Jul-21	1.8	1.80	7.20	0.25	23.5	7.88	204	7.15	2.2	93
				1.00	23.5	7.88	204	7.12	2.2	96
19-Jul-21	--	1.20	6.91	0.25	18.4	8.87	214	6.60	3.4	75
				1.00	18.3	8.86	214	6.63	3.3	75
26-Jul-21	--	1.10	6.94	0.25	18.7	8.68	222	6.88	3.0	68
				1.00	8.8	8.67	222	6.89	3.0	68
01-Aug-21	--	1.30	6.63	0.25	21.4	8.65	234	6.50	0.7	72
				1.00	21.2	8.52	235	6.58	0.8	68

Table A.8. Continued. Camp Lake Station EB-1 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
09-Aug-21	--	1.20	7.06	0.25	19.9	8.32	250	6.58	3.3	53
				1.00	19.7	8.24	250	6.61	3.3	51
16-Aug-21	--	0.70	7.17	0.25	19.0	8.88	202	6.25	7.7	66
				1.00	19.0	8.83	202	6.37	7.7	66
23-Aug-21	--	0.70	7.18	0.25	15.4	9.36	283	6.34	7.3	87
				1.00	15.5	9.30	283	6.36	7.3	87
30-Aug-21	--	1.20	7.08	0.25	16.9	9.34	262	6.41	4.2	91
				1.00	16.0	9.40	261	6.51	4.4	93
06-Sep-21	--	0.80	6.97	0.25	15.6	9.13	290	6.77	7.6	114
				1.00	15.4	9.10	290	6.80	7.5	119
13-Sep-21	--	0.70	6.84	0.25	13.4	9.58	322	6.49	9.1	83
				1.00	13.4	9.57	323	6.50	9.1	84
20-Sep-21	--	0.80	6.81	0.25	11.0	10.67	343	6.18	10.4	96
				1.00	11.1	10.53	343	6.19	10.4	96
27-Sep-21	1.3	0.70	6.99	0.25	12.8	10.00	331	6.85	12.6	166
				1.00	12.8	9.98	329	6.86	12.5	168
13-Oct-21	--	0.60	6.77	0.25	7.9	11.47	374	6.25	14.4	131
				1.00	7.9	11.31	375	6.26	14.3	133

Table A.9. Camp Lake Station EB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
21-Oct-21	--	0.60	6.69	0.25	3.8	12.39	303	6.45	15.5	138
				1.00	3.8	12.27	303	6.50	23.5	140
18-Mar-22	--	--	--	0.25	0.7	12.89	374	6.66	16.3	67
				1.00	2.0	6.88	474	6.55	15.1	76
17-Feb-21	1.4	--	6.96	0.25	0.0	12.36	83	6.82	0.1	138
01-Jun-21	--	0.60	7.13	0.25	13.1	10.15	262	6.82	13.5	211
				1.00	13.1	10.20	262	6.81	13.5	208
08-Jun-21	--	0.80	6.94	0.25	17.3	8.90	249	6.98	10.4	156
				1.00	17.4	8.88	249	6.98	10.3	156
16-Jun-21	--	1.00	7.19	0.25	19.5	8.81	244	7.01	6.5	207
				1.00	19.4	8.80	245	7.00	6.6	207
21-Jun-21	--	0.90	6.89	0.25	15.9	9.21	189	7.05	6.1	186
				1.00	15.9	9.21	189	7.05	6.1	186
28-Jun-21	--	1.20	6.84	0.25	21.8	8.70	246	6.88	3.8	157
				1.00	21.7	8.69	246	6.87	3.8	157
05-Jul-21	--	1.20	7.25	0.25	22.2	7.78	222	7.06	2.9	208
				1.00	22.2	7.77	222	7.04	2.9	208
12-Jul-21	1.8	1.80	7.15	0.25	24.1	7.90	210	7.13	2.4	132
				1.00	24.0	7.89	210	7.14	2.8	137

Table A.9. Continued. Camp Lake Station EB-2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
19-Jul-21	--	1.40	6.88	0.25	19.2	8.49	226	6.81	3.5	109
				1.00	17.9	8.64	231	6.82	3.5	108
26-Jul-21	--	1.10	6.97	0.25	19.4	8.64	230	6.96	3.5	85
				1.00	19.4	8.62	230	6.96	3.5	85
01-Aug-21	--	1.10	7.02	0.25	22.1	8.30	242	6.74	1.4	83
				1.00	22.1	8.29	242	6.76	1.4	82
09-Aug-21	--	1.20	7.02	0.25	19.8	8.58	256	6.67	2.9	46
				1.00	19.7	8.48	256	6.68	3.0	47
16-Aug-21	--	0.70	7.28	0.25	19.4	8.88	205	6.44	8.2	95
				1.00	19.5	8.84	205	6.45	8.2	94
23-Aug-21	--	0.80	7.30	0.25	14.6	9.52	292	6.53	7.7	85
				1.00	14.6	9.48	292	6.55	7.8	85
30-Aug-21	--	0.80	7.21	0.25	17.6	9.28	266	6.64	4.0	94
				1.00	16.9	9.21	266	6.67	14.0	97
06-Sep-21	--	0.70	6.93	0.25	15.5	9.14	311	6.83	9.4	126
				1.00	15.5	9.10	333	6.82	9.8	129
13-Sep-21	--	0.70	7.00	0.25	13.6	9.73	341	6.67	8.8	99
				1.00	13.6	9.72	341	6.66	8.8	100
20-Sep-21	--	0.70	6.99	0.25	11.3	10.33	349	6.37	10.0	120
				1.00	11.3	10.27	349	6.38	9.9	120
27-Sep-21	1.1	0.60	7.07	0.25	12.3	10.14	349	6.93	12.5	183
13-Oct-21	--	0.60	6.87	0.25	8.0	11.58	379	6.32	13.5	144
				1.00	8.0	11.25	380	6.33	51.6	146
18-Mar-22	1.4	--	--	0.25	0.7	13.47	380	6.73	16.1	80
				1.00	0.7	8.97	577	6.66	19.2	91

Table A.10. Sherlett Creek (SC-1) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	--	--	6.79	0.25	0.1	11.29	66	6.59	0.4	64
01-Jun-21	--	--	7.49	0.25	13.6	10.15	203	6.91	11.9	202
08-Jun-21	--	--	7.42	0.25	17.2	9.28	60	7.30	1.6	147
16-Jun-21	--	--	7.24	0.25	17.6	8.36	62	7.09	1.5	202
21-Jun-21	--	--	7.13	0.25	16.3	9.12	46	7.46	1.2	189
28-Jun-21	--	--	7.04	0.25	20.4	8.55	62	7.15	0.8	155
05-Jul-21	--	--	7.03	0.25	21.4	7.21	63	7.08	0.8	166
12-Jul-21	--	--	7.23	0.25	23.1	8.28	61	7.23	10.7	192
18-Jul-21	--	--	6.89	0.25	19.2	7.00	66	6.74	0.8	219
19-Jul-21	--	--	7.30	0.25	20.6	9.30	64	7.21	1.1	130
26-Jul-21	--	--	--	0.25	18.9	8.46	64	7.29	8.7	116
01-Aug-21	--	--	7.17	0.25	20.9	7.59	65	7.47	0.3	77
09-Aug-21	--	--	7.14	0.25	20.1	7.91	69	7.06	1.8	91
16-Aug-21	--	--	7.56	0.25	18.1	8.39	54	7.34	1.4	158
23-Aug-21	--	--	7.19	0.25	15.2	8.65	71	7.04	2.6	110
30-Aug-21	--	--	7.22	0.25	16.3	7.60	67	6.87	0.2	113
01-Sep-21	--	--	6.97	0.25	17.6	7.00	75	6.27	0.3	205
06-Sep-21	--	--	7.02	0.25	14.6	6.85	77	6.87	2.4	140
20-Sep-21	--	--	7.04	0.25	10.7	9.11	105	6.74	5.7	141
27-Sep-21	--	--	6.81	0.25	12.6	7.37	96	6.83	2.9	141
14-Sep-21	--	--	6.85	0.25	12.6	7.46	96	6.72	4.0	188
13-Oct-21	--	--	7.00	0.25	6.8	9.66	105	6.75	7.4	185
21-Oct-21	--	--	6.48	--	4.4	9.14	86	6.72	4.4	150
18-Mar-22	--	--	--	0.25	0.2	11.93	64	7.26	0.0	16

Table A.11. Sherlett Creek (SC-2) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Jul-21	--	--	6.94	0.25	19.3	7.21	261	6.57	0.8	231
26-Jul-21	--	--	--	0.25	18.8	7.78	66	7.03	0.8	124
09-Aug-21	--	--	7.06	0.25	19.9	8.40	16	7.12	3.7	77
01-Sep-21	--	--	7.07	0.25	17.4	6.65	75	6.36	0.4	206
20-Sep-21	--	--	7.96	0.25	10.8	8.26	97	7.10	5.7	246

Table A.12. Sherlett Creek (SC-3) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Jul-21	--	--	6.81	0.25	19.1	6.99	71	6.56	0.6	219
26-Jul-21	--	--	--	0.25	18.9	8.09	66	7.01	1.7	118
09-Aug-21	--	--	6.91	0.25	20.3	8.27	72	7.09	1.8	69
01-Sep-21	--	--	7.00	0.25	17.5	6.71	75	6.39	0.5	205
20-Sep-21	--	--	6.99	0.25	11.1	9.18	76	7.07	9.8	248

Table A.13. Sherlett Creek (SC-4) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Jul-21	--	--	6.98	0.25	19.5	7.49	59	6.84	0.6	196
26-Jul-21	--	--	--	0.25	19.0	8.03	61	7.09	1.0	120
09-Aug-21	--	--	7.06	0.25	20.2	8.15	62	7.14	8.5	73
01-Sep-21	--	--	7.02	0.25	17.6	6.84	75	6.40	0.5	205
20-Sep-21	--	--	7.08	0.25	11.9	7.86	114	6.74	16.0	128

Table A.14. Sherlett Creek (SC-5) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Jul-21	--	--	7.01	0.25	19.5	7.50	60	7.25	0.7	155
26-Jul-21	--	--	--	0.25	19.0	8.78	12	7.26	9.9	122
09-Aug-21	--	--	7.20	0.25	20.4	8.80	62	7.15	1.6	87
01-Sep-21	--	--	6.98	0.25	17.6	6.78	75	6.41	0.4	205
21-Sep-21	--	--	7.10	0.25	12.5	9.14	34	7.22	3.0	143

Table A.15. Sherlett Creek (SC-6) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Jul-21	--	--	7.15	0.25	19.8	8.28	59	7.46	0.9	145
09-Aug-21	--	--	7.30	0.25	21.4	8.50	61	7.34	0.7	92
21-Sep-21	--	--	7.15	0.25	12.6	9.93	44	7.20	1.7	145
21-Oct-21	--	--	7.10	--	5.3	10.80	50	6.94	1.6	136

Table A.16. Portage Lake Inflow - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
06-Jul-21	--	--	6.55	0.25	23.5	8.61	47	7.32	7.2	73

Table A.17. Conservation Dock (Cold Lake) - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
06-Jul-21	--	--	6.88	0.25	24.0	8.42	68	7.55	1.4	100
				1.00	22.2	8.43	70	7.52	1.4	102
				2.00	21.3	8.40	70	7.48	1.5	104

Table A.18. Trap Lake - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
01-Aug-21	--	1.00	7.01	0.25	22.1	8.37	514	6.98	4.5	135
				1.00	20.8	8.26	513	6.88	4.8	138

Table A.19. Fox Lake - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
01-Aug-21	--	2.90	7.77	0.25	21.6	8.92	416	7.74	-1.7	125
				1.00	21.6	9.02	416	7.80	-1.7	124
				2.00	21.5	8.94	417	7.80	-1.7	125

Table A.20. Cold Lake Station CL2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	13.0	--	7.56	0.25	0.3	12.53	106	6.73	0.7	138
				1.00	0.6	12.02	94	6.73	0.6	146
				2.00	0.9	11.82	96	6.73	0.7	150
				3.00	1.3	11.63	103	6.73	0.8	155
				4.00	1.8	10.43	106	6.73	0.8	158
				5.00	3.2	9.21	123	6.71	2.2	162
				6.00	4.0	6.20	125	6.65	5.5	166
08-Jun-21	--	1.20	6.95	0.25	14.6	9.77	108	6.90	3.3	196
				1.00	14.6	9.77	108	6.92	2.9	197
				2.00	14.4	9.75	108	6.92	2.9	199
				3.00	13.9	9.70	105	6.93	2.9	200
				4.00	11.3	9.86	108	6.93	2.8	200
				5.00	9.7	10.02	110	7.09	2.8	200
				6.00	9.4	9.94	105	7.07	2.9	198
				7.00	9.2	9.91	105	7.06	2.9	197
				8.00	8.9	9.84	105	7.04	3.0	199
28-Jun-21	9.5	1.70	7.02	0.25	17.5	8.96	109	7.14	1.7	93
				1.00	17.3	8.92	109	7.01	1.8	109
				2.00	17.3	8.92	109	6.99	1.8	111
				3.00	17.2	8.89	108	6.97	1.8	113
				4.00	16.9	8.82	108	6.95	1.8	115
				5.00	16.0	8.63	107	6.93	1.8	119
				6.00	13.7	8.54	111	6.93	1.9	120
				7.00	11.1	8.17	108	6.97	2.6	121
				8.00	10.9	7.70	106	7.00	2.8	121
				9.00	8.7	7.07	111	6.96	4.1	130
19-Jul-21	9.3	1.90	7.07	0.25	20.1	8.01	108	7.55	1.1	172
				1.00	20.1	7.99	108	7.48	1.1	174
				2.00	19.4	7.98	107	7.27	1.2	180
				3.00	19.3	7.97	106	7.05	1.2	195
				4.00	19.2	7.90	105	6.98	1.2	197
				5.00	18.1	6.60	104	6.78	1.3	204
				6.00	13.9	6.08	105	6.60	2.0	210
				7.00	11.6	5.76	109	6.58	2.1	211
				8.00	9.7	5.16	109	6.51	2.9	212
				9.00	9.1	3.84	113	6.36	7.4	213
09-Aug-21	9.1	2.30	7.04	0.25	20.4	8.14	108	7.17	1.0	188
				1.00	20.4	8.07	108	6.96	1.0	191
				2.00	20.4	8.00	108	6.91	1.0	194
				3.00	20.4	7.91	108	6.86	1.0	204
				4.00	20.3	7.84	108	6.83	1.1	204
				5.00	19.9	6.96	108	6.83	1.2	203
				6.00	17.5	5.41	107	6.68	2.4	202
				7.00	14.8	4.77	111	6.64	3.0	203
				8.00	11.5	3.85	113	6.49	3.2	204
				9.00	9.5	2.02	116	6.37	9.2	209

Table A.20. Continued. Cold Lake Station CL2 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
30-Aug-21	9.0	2.00	7.45	0.25	16.4	8.43	98	6.10	0.1	227
				1.00	16.4	8.36	98	6.23	0.2	233
				2.00	16.4	8.32	98	6.24	0.1	237
				3.00	16.3	8.16	98	6.33	0.1	235
				4.00	16.3	8.07	98	6.35	0.2	236
				5.00	16.2	8.03	98	6.37	0.1	236
				6.00	16.2	8.05	98	6.35	0.2	243
				7.00	16.1	8.03	98	6.29	0.2	244
				8.00	15.8	7.07	99	6.25	0.4	246
				9.00	10.8	0.94	104	5.91	4.1	224
27-Sep-21	9.0	1.60	7.55	0.25	13.7	9.02	106	7.01	2.7	206
				1.00	13.7	9.00	106	6.90	2.7	208
				2.00	13.6	8.99	106	6.88	2.6	214
				3.00	13.6	8.93	106	6.88	2.7	224
				4.00	13.4	8.82	106	6.85	2.9	228
				5.00	13.3	8.73	106	6.80	3.0	232
				6.00	13.1	8.71	106	6.81	3.1	234
				7.00	13.1	8.60	106	6.80	3.1	235
				8.00	13.0	8.25	106	6.76	4.1	236
				9.00	12.1	2.73	118	6.37	31.8	194
18-Mar-22	9.6	--	--	0.25	0.1	12.64	101	7.08	0.6	128
				1.00	0.3	12.54	102	7.12	0.8	128
				2.00	0.7	12.32	101	7.16	0.9	127
				3.00	1.0	11.92	100	7.17	1.0	127
				4.00	1.4	11.72	99	7.17	1.2	127
				5.00	1.7	11.29	98	7.13	1.1	128
				6.00	2.0	9.45	101	7.05	2.5	130
				7.00	2.6	7.76	117	6.85	5.8	134
				8.00	2.9	6.91	162	6.67	8.9	140

Table A.21. Cold Lake Station CL3 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	3.7	--	6.54	0.25	0.2	11.83	84	6.70	0.5	167
				1.00	0.7	12.09	94	6.66	0.8	167
				2.00	0.7	11.92	94	6.66	0.7	168
				3.00	0.9	11.63	95	6.66	0.7	167
01-Jun-21	--	0.90	7.44	0.25	12.0	10.52	121	7.21	4.7	207
				1.00	11.5	10.48	132	7.17	5.8	208
				2.00	10.5	10.44	128	7.13	5.5	210
				3.00	9.8	10.44	118	7.13	4.6	210
08-Jun-21	--	1.10	7.10	0.25	15.3	9.48	125	7.22	3.9	156
				1.00	15.1	9.61	113	7.23	5.1	155
				2.00	15.0	9.59	110	7.22	5.2	156
16-Jun-21	--	0.80	7.78	0.25	18.0	9.00	140	7.22	3.2	166
				1.00	17.5	9.11	121	7.26	2.5	154
				2.00	17.5	9.14	118	7.26	2.5	155
				3.00	17.4	9.16	113	7.16	2.4	156
21-Jun-21	3.9	1.80	7.49	0.25	15.1	9.16	81	7.23	2.1	179
				1.00	15.1	9.14	81	7.22	2.1	178
				2.00	15.1	9.13	81	7.20	2.1	177
				3.00	15.1	9.09	81	7.14	2.1	177
28-Jun-21	2.5	1.60	7.11	0.25	19.0	8.78	113	7.20	1.9	144
				1.00	18.9	8.77	119	7.20	1.8	144
				2.00	18.7	8.78	108	7.20	1.7	143
05-Jul-21	3.9	2.00	7.12	0.25	21.4	8.22	139	6.64	1.9	236
				1.00	21.3	8.16	134	6.66	1.9	235
				2.00	20.9	8.06	111	6.77	1.7	231
12-Jul-21	2.9	2.00	7.33	0.25	23.4	7.91	132	7.26	1.6	246
				1.00	23.4	7.87	136	7.24	1.6	245
				2.00	23.5	7.86	137	7.23	1.5	244
19-Jul-21	3.9	2.00	7.12	0.25	20.3	8.03	105	7.29	1.1	145
				1.00	19.9	7.96	105	7.28	1.2	144
				2.00	19.8	7.95	105	7.27	1.1	143
				3.00	19.5	7.95	108	7.26	1.2	144
26-Jul-21	3.9	2.00	7.24	0.25	19.8	8.35	112	7.19	1.0	196
				1.00	19.8	8.28	113	7.19	1.0	196
				2.00	19.8	8.24	115	7.19	1.0	195
				3.00	19.7	8.19	120	7.18	1.1	195
01-Aug-21	3.9	2.00	7.11	0.25	20.8	8.26	108	7.27	0.9	171
				1.00	20.9	8.22	109	7.24	0.8	170
				2.00	20.9	8.19	109	7.20	0.8	171
				3.00	20.8	8.17	111	7.03	0.7	172
09-Aug-21	3.7	2.10	7.09	0.25	20.4	8.32	112	7.23	1.1	64
				1.00	20.4	8.15	112	7.22	1.1	65
				2.00	20.4	8.05	114	7.21	1.2	66
				3.00	20.3	7.99	116	7.20	1.3	68

Table A.21. Continued. Cold Lake Station CL3 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
16-Aug-21	3.9	2.00	7.56	0.25	20.0	8.24	82	6.97	1.2	204
				1.00	20.0	8.23	82	6.96	1.2	204
				2.00	19.9	8.21	82	6.96	1.3	204
				3.00	19.2	8.16	93	6.92	1.4	205
23-Aug-21	3.8	1.60	7.50	0.25	16.9	8.25	113	6.73	2.0	190
				1.00	17.0	8.19	113	6.72	2.0	190
				2.00	17.0	8.13	113	6.72	2.0	190
				3.00	17.0	8.10	113	6.72	2.1	190
30-Aug-21	3.8	1.90	7.35	0.25	16.8	8.55	108	6.95	0.2	121
				1.00	16.8	8.45	111	6.95	0.2	123
				2.00	16.7	8.33	119	6.95	0.1	124
				3.00	16.5	8.24	119	6.91	1.1	128
06-Sep-21	3.8	2.00	7.19	0.25	16.3	8.48	105	7.02	2.7	200
				1.00	16.3	8.43	105	6.96	2.7	201
				2.00	16.3	8.41	105	6.91	2.7	205
				3.00	16.3	8.40	109	6.88	2.8	204
13-Sep-21	3.7	1.80	7.15	0.25	15.4	8.74	109	6.98	1.9	161
				1.00	15.4	8.68	109	6.91	2.0	163
				2.00	15.4	8.66	109	6.88	2.0	164
				3.00	15.4	8.65	110	6.85	2.1	165
20-Sep-21	3.6	1.50	7.31	0.25	13.5	8.98	109	6.96	2.8	198
				1.00	13.5	8.93	109	6.94	2.9	198
				2.00	13.5	8.85	110	6.88	2.8	199
27-Sep-21	3.7	1.80	7.49	0.25	13.6	9.13	105	7.35	2.7	252
				1.00	13.6	9.12	105	7.35	2.6	250
				2.00	13.6	9.10	105	7.34	2.6	249
				3.00	13.5	8.98	115	7.28	3.8	244
13-Oct-21	--	1.30	7.29	0.25	10.7	9.55	109	7.04	3.6	158
				1.00	10.7	9.46	109	6.98	3.6	161
				2.00	10.7	9.42	109	6.94	3.4	163
				3.00	10.6	9.38	122	6.76	4.1	171
21-Oct-21	3.6	1.70	7.32	0.25	8.1	10.34	85	7.05	3.0	159
				1.00	8.1	10.24	85	0.07	3.1	161
				2.00	8.0	10.20	85	7.07	3.0	163
18-Mar-22	3.6	--	--	0.25	0.3	11.36	82	7.03	0.8	103
				1.00	0.4	11.23	87	6.98	0.6	109
				2.00	0.7	11.54	98	7.06	0.9	112

Table A.22. Cold Lake Station CL4 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	11.9	--	6.60	0.25	0.2	11.54	59	6.70	-0.70	132
				1.00	0.3	11.55	64	6.68	-0.80	133
				2.00	0.9	11.63	71	6.69	-0.50	135
				3.00	1.1	11.67	72	6.72	-0.50	135
				4.00	1.3	11.53	72	6.75	-0.50	135
				5.00	1.8	11.24	74	6.77	-0.30	136
				6.00	2.6	9.73	83	6.78	0.8	138
				7.00	3.3	8.44	90	6.75	2.1	140
				8.00	3.8	7.13	55	6.71	3.4	141
				9.00	4.2	4.90	94	6.65	9.5	143
				10.00	4.5	2.06	98	6.58	18.1	145
08-Jun-21	--	1.60	7.18	0.25	15.4	9.69	97	7.40	2.4	174
				1.00	15.3	9.68	98	7.38	2.5	173
				2.00	14.7	9.64	100	7.36	2.6	174
				3.00	11.9	9.85	106	7.34	2.7	174
				4.00	9.8	9.96	105	7.32	2.9	175
				5.00	9.7	9.60	101	7.31	3.0	175
				6.00	9.4	9.58	100	7.30	3.2	175
				7.00	9.0	9.64	99	7.29	3.3	175
				8.00	8.6	9.69	94	7.26	2.7	175
				9.00	8.5	9.72	93	7.24	2.9	175
				10.00	8.4	9.58	93	7.22	3.3	175
				11.00	8.3	9.50	93	7.20	3.4	175
28-Jun-21	11.7	1.30	7.11	0.25	19.3	8.92	99	7.48	1.8	181
				1.00	19.3	8.91	99	7.44	1.8	179
				2.00	18.6	8.83	102	7.38	1.8	177
				3.00	18.2	8.80	104	7.37	1.7	177
				4.00	16.1	8.81	107	7.35	1.8	177
				5.00	15.8	8.73	105	7.34	1.9	177
				6.00	14.4	8.50	106	7.32	2.1	178
				7.00	13.0	7.76	104	7.19	2.6	179
				8.00	12.5	7.65	104	7.15	2.9	180
				9.00	12.0	7.57	104	7.13	3.1	181
				10.00	11.4	7.30	104	7.02	3.4	183
				11.00	11.4	7.27	104	7.01	3.4	183
19-Jul-21	10.7	1.80	7.12	0.25	20.4	8.75	102	7.31	1.3	148
				1.00	20.2	8.32	102	7.31	1.4	147
				2.00	19.8	8.27	101	7.30	1.3	145
				3.00	19.7	8.17	101	7.29	1.3	144
				4.00	19.5	7.95	103	7.27	1.2	143
				5.00	19.0	7.20	100	7.24	1.4	143
				6.00	15.9	6.53	102	7.10	2.0	144
				7.00	15.2	5.67	103	7.05	2.7	146
				8.00	14.3	5.13	103	6.99	3.1	147
				9.00	12.4	4.48	106	6.93	5.7	149
				10.00	11.8	3.57	106	6.79	10.5	150

Table A.22. Continued. Cold Lake Station CL4 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
09-Aug-21	10.6	2.10	7.31	0.25	20.6	7.90	106	7.24	1.0	101
				1.00	20.5	7.89	106	7.22	1.0	102
				2.00	20.4	7.85	107	7.20	1.0	103
				3.00	20.3	7.82	107	7.18	1.0	104
				4.00	20.3	7.81	107	7.17	1.0	104
				5.00	20.3	7.80	107	7.16	1.0	105
				6.00	18.9	7.04	107	7.14	1.2	106
				7.00	16.0	5.31	108	6.96	2.4	107
				8.00	15.6	4.00	106	6.79	4.1	115
				9.00	13.6	3.18	110	6.60	6.6	118
				10.00	12.6	1.71	111	6.45	26.9	130
30-Aug-21	10.8	2.00	7.38	0.25	16.9	8.59	97	7.05	0.1	139
				1.00	16.8	8.44	97	7.04	0.1	140
				2.00	16.6	8.27	96	7.03	0.1	141
				3.00	16.5	8.23	96	7.02	0.2	142
				4.00	16.5	8.18	95	7.02	0.1	143
				5.00	16.3	8.09	94	6.98	0.1	144
				6.00	16.1	7.80	94	6.93	0.9	147
				7.00	16.0	7.46	94	6.74	1.5	157
				8.00	16.0	6.88	95	6.55	2.3	126
				9.00	15.9	6.64	95	6.45	2.9	141
				10.00	15.7	6.08	96	6.33	6.2	149
27-Sep-21	10.3	1.80	7.48	0.25	13.5	9.14	103	7.34	2.7	275
				1.00	13.4	9.01	104	7.32	2.7	271
				2.00	13.2	8.91	105	7.29	2.8	271
				3.00	13.1	8.75	106	7.21	3.0	269
				4.00	13.1	8.72	106	7.23	3.0	269
				5.00	13.1	8.70	106	7.05	3.0	269
				6.00	13.1	8.68	106	6.99	3.1	261
				7.00	13.0	8.51	103	6.94	3.4	248
				8.00	12.9	8.72	100	6.95	3.2	253
				9.00	12.8	8.62	100	6.91	4.0	258
21-Oct-21	11.0	1.50	7.40	0.25	8.3	10.30	83	6.50	3.4	245
				1.00	8.3	10.09	83	6.54	3.4	244
				2.00	8.4	10.07	83	6.58	3.3	243
				3.00	8.4	10.03	83	6.60	3.4	244
				4.00	8.4	10.00	83	6.60	3.4	245
				5.00	8.4	9.98	83	6.58	3.4	246
				6.00	8.4	9.96	83	6.56	3.5	248
				7.00	8.4	9.95	83	6.56	3.3	249
				8.00	8.4	9.94	83	6.56	3.3	249
				9.00	8.4	9.90	83	6.58	3.3	249
				10.00	8.3	9.91	83	6.60	3.3	249

Table A.22. Continued. Cold Lake Station CL4 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Mar-22	11.5	--	--	0.25	0.0	11.97	87	6.89	0.2	104
				1.00	0.2	11.76	87	6.95	0.4	106
				2.00	0.9	11.58	95	7.12	0.9	74
				3.00	1.2	11.43	95	7.13	0.9	87
				4.00	1.6	11.03	99	7.07	1.2	98
				5.00	2.1	9.45	102	6.95	2.2	106
				6.00	3.0	6.57	107	6.77	5.6	114
				7.00	3.3	6.55	140	6.53	14.7	122
				8.00	3.6	2.83	148	6.50	17.4	123
				9.00	3.7	2.11	152	6.48	23.1	124

Table A.23. Cold Lake Station CL5 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	10.4	--	6.18	0.25	0.9	10.87	56	6.32	0.0	130
				1.00	0.7	11.64	73	6.52	0.8	139
				2.00	1.0	11.68	73	6.62	0.8	143
				3.00	1.2	11.67	74	6.68	-0.50	146
				4.00	1.4	11.53	75	6.71	-0.40	147
				5.00	1.7	11.34	76	6.73	-0.40	149
				6.00	2.8	10.02	86	6.72	0.8	151
				7.00	3.8	8.19	92	6.69	1.5	153
				8.00	4.3	4.49	94	6.62	6.5	155
08-Jun-21	--	1.80	7.31	0.25	15.1	9.70	96	7.32	2.4	196
				1.00	15.0	9.72	96	7.31	2.5	195
				2.00	14.9	9.71	97	7.31	2.5	195
				3.00	13.2	9.86	102	7.30	2.5	195
				4.00	11.0	10.12	105	7.30	2.6	195
				5.00	9.4	10.03	98	7.29	2.6	195
				6.00	9.3	9.99	98	7.29	2.8	195
				7.00	9.1	9.90	97	7.28	2.8	195
				8.00	8.9	9.85	96	7.26	2.7	195
28-Jun-21	9.3	1.20	7.24	0.25	19.5	8.89	94	7.41	2.5	177
				1.00	19.5	8.83	94	7.40	1.9	177
				2.00	18.5	8.79	103	7.36	1.7	177
				3.00	18.1	8.82	105	7.34	1.7	176
				4.00	15.8	8.67	104	7.32	1.9	176
				5.00	14.2	8.39	103	7.31	2.2	176
				6.00	13.6	8.11	101	7.28	2.6	176
				7.00	12.2	7.97	104	7.27	2.7	177
				8.00	11.6	7.82	103	7.25	3.0	177
				8.50	10.7	6.90	103	7.18	4.8	179

Table A.23. Continued. Cold Lake Station CL5 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
19-Jul-21	9.1	1.90	7.20	0.25	20.4	9.25	100	7.15	1.5	173
				1.00	19.8	8.50	101	7.19	1.4	168
				2.00	19.5	8.24	101	7.23	1.5	163
				3.00	19.5	8.18	101	7.24	1.5	162
				4.00	19.5	8.13	99	7.25	1.5	159
				5.00	19.4	8.09	98	7.26	1.4	156
				6.00	16.8	7.51	102	7.26	1.6	156
				7.00	13.2	5.81	105	7.08	3.2	157
				8.00	12.7	4.79	104	6.94	5.2	160
09-Aug-21	9.0	2.30	7.10	0.25	20.6	8.27	101	7.06	1.1	17
				1.00	20.6	8.16	102	7.07	1.1	15
				2.00	20.5	8.09	102	7.09	1.1	14
				3.00	20.4	8.00	102	7.10	1.1	12
				4.00	20.4	0.95	103	7.11	1.1	11
				5.00	20.3	7.87	103	7.12	1.0	11
				6.00	18.8	7.08	104	7.11	1.2	11
				7.00	16.6	5.86	107	6.98	1.9	11
				8.00	13.9	3.72	109	6.91	4.8	14
30-Aug-21	8.9	2.00	7.37	0.25	17.2	8.65	96	6.93	0.2	90
				1.00	17.2	8.55	96	6.99	0.2	89
				2.00	17.1	8.52	96	7.00	0.2	89
				3.00	16.7	8.44	95	7.03	0.1	90
				4.00	16.4	8.25	94	7.02	0.1	91
				5.00	16.3	8.23	93	7.01	0.2	92
				6.00	16.2	8.24	92	7.00	0.2	93
				7.00	16.1	8.21	92	7.00	0.3	93
				8.00	15.9	7.66	92	6.95	1.8	95
				9.00	15.8	7.54	92	6.87	2.4	100
27-Sep-21	9.0	--	7.48	0.25	13.2	9.16	102	7.35	2.6	253
				1.00	13.2	9.07	102	7.35	2.6	252
				2.00	13.1	8.99	102	7.33	2.6	252
				3.00	13.1	8.90	102	7.31	2.7	252
				4.00	13.0	8.90	102	7.30	2.7	253
				5.00	13.0	8.92	101	7.30	2.6	253
				6.00	13.0	8.92	101	7.30	2.7	254
				7.00	12.8	8.81	100	7.25	2.8	255
				8.00	12.7	8.87	98	7.17	3.0	266
21-Oct-21	9.0	1.90	7.95	0.25	8.3	10.27	81	6.43	2.9	227
				1.00	8.2	10.24	81	6.44	2.9	234
				2.00	8.2	10.22	81	6.42	2.9	239
				3.00	8.2	10.20	81	6.39	2.9	244
				4.00	8.2	10.19	81	6.40	2.9	247
				5.00	8.2	10.18	81	6.41	2.9	250
				6.00	8.2	10.16	81	6.40	3.0	253
				7.00	8.2	10.17	81	6.40	3.0	254
				8.00	8.2	10.16	81	6.42	2.8	255

Table A.23. Continued. Cold Lake Station CL5 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
18-Mar-22	9.1	--	--	0.25	0.1	12.05	73	6.94	0.4	84
				1.00	0.4	11.47	85	6.92	0.3	89
				2.00	0.8	1.10	87	6.98	0.0	93
				3.00	1.3	11.26	91	7.04	0.6	100
				4.00	1.6	11.13	97	7.03	1.2	105
				5.00	2.1	9.94	97	6.96	1.5	108
				6.00	2.9	7.32	98	6.78	4.2	113
				7.00	3.5	4.50	105	6.62	12.5	117
				8.00	3.9	3.95	114	6.54	18.8	118

Table A.24. Cold Lake Station CL6 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	8.5	--	6.13	0.25	0.1	12.55	69	6.73	-0.90	154
				1.00	0.5	9.01	67	6.70	-0.70	155
				2.00	1.0	8.89	69	6.65	-0.50	155
				3.00	1.3	10.09	72	6.66	-0.80	155
				4.00	1.6	10.27	73	6.69	-0.70	155
				5.00	2.0	9.99	74	6.72	-0.20	156
				6.00	3.4	5.64	85	6.69	3.0	160
08-Jun-21	--	1.90	7.43	0.25	14.5	10.00	94	7.40	2.3	171
				1.00	4.5	9.98	94	7.36	2.3	172
				2.00	14.1	9.93	93	7.35	2.3	172
				3.00	13.7	9.89	92	7.34	2.1	173
				4.00	11.6	10.31	94	7.34	1.9	173
				5.00	9.3	10.42	91	7.35	1.7	173
				6.00	8.8	10.34	90	7.34	1.7	173
				7.00	8.3	10.30	89	7.34	1.7	173
28-Jun-21	--	1.50	7.10	0.25	19.4	8.87	95	7.43	1.9	182
				1.00	19.4	8.87	95	7.41	1.9	183
				2.00	19.4	8.86	95	7.39	1.9	183
				3.00	17.9	8.84	96	7.37	1.8	183
				4.00	17.3	8.90	95	7.37	1.8	183
				5.00	16.2	8.89	96	7.36	1.9	183
				6.00	12.3	8.65	104	7.36	2.1	183
				7.00	10.6	7.52	105	7.34	3.0	185
19-Jul-21	7.9	2.00	7.14	0.25	20.2	8.56	96	7.26	1.3	168
				1.00	19.9	8.32	96	7.27	1.3	165
				2.00	19.7	8.30	96	7.28	1.3	163
				3.00	19.6	8.28	96	7.31	1.3	160
				4.00	19.5	8.18	96	7.31	1.3	158
				5.00	19.4	8.12	96	7.31	1.3	158
				6.00	16.1	7.55	101	7.30	1.5	158
				7.00	12.8	5.19	106	7.11	4.2	161

Table A.24. Continued. Cold Lake Station CL6 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
09-Aug-21	7.8	2.50	7.10	0.25	20.5	8.12	99	7.11	1.2	30
				1.00	20.4	8.05	99	7.12	1.2	28
				2.00	20.4	8.02	99	7.13	1.2	27
				3.00	20.3	8.00	99	7.13	1.2	26
				4.00	20.3	7.97	99	7.14	1.2	26
				5.00	20.3	7.95	99	7.15	1.2	25
				6.00	18.4	7.20	102	7.15	1.4	25
30-Aug-21	7.7	1.90	7.45	0.25	17.1	8.99	90	7.14	0.1	83
				1.00	17.0	8.97	90	7.18	0.1	84
				2.00	16.9	8.92	90	7.19	0.2	86
				3.00	16.5	8.82	89	7.19	0.1	87
				4.00	16.1	8.71	88	7.17	0.3	88
				5.00	16.0	8.48	87	7.14	0.1	90
				6.00	16.0	8.33	89	7.10	0.1	91
				7.00	15.9	8.25	89	7.07	0.2	94
				8.00	15.9	8.11	89	7.02	0.3	96
27-Sep-21	7.6	--	7.59	0.25	13.0	9.63	96	7.46	1.9	270
				1.00	13.0	9.58	97	7.46	1.9	269
				2.00	13.0	9.56	97	7.46	1.9	268
				3.00	13.0	9.54	97	7.45	1.9	267
				4.00	13.0	9.51	96	7.45	1.9	265
				5.00	12.9	9.48	97	7.44	1.9	265
				6.00	12.9	9.40	97	7.41	2.0	265
				7.00	12.6	9.15	97	7.33	2.8	266
18-Mar-22	8.4	--	--	0.25	0.2	--	92	6.86	0.1	33
				1.00	0.3	10.21	88	6.84	0.0	62
				2.00	0.7	10.53	87	6.81	0.0	84
				3.00	1.4	10.77	88	6.75	0.2	98
				4.00	2.2	9.62	91	6.61	1.0	111
				5.00	3.8	1.96	100	6.40	40.0	64

Table A.25. Cold Lake Station CL7 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	2.7	--	6.45	0.25	0.3	12.39	94	6.65	0.5	149
				1.00	0.6	12.11	93	6.65	0.6	150
				2.00	0.9	11.79	95	6.65	0.7	151
01-Jun-21	--	0.90	7.36	0.25	11.9	10.45	123	7.19	5.2	203
				1.00	11.6	10.42	161	7.13	8.5	205
				2.00	11.3	10.10	164	7.09	8.4	207
08-Jun-21	--	1.00	6.99	0.25	15.6	9.44	136	7.25	4.9	155
				1.00	15.6	9.42	133	7.24	4.7	155
				2.00	15.1	9.43	118	7.24	3.7	155

Table A.25. Continued. Cold Lake Station CL7 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
16-Jun-21	--	0.90	7.12	0.25	18.1	8.96	144	6.95	3.3	190
				1.00	18.1	8.95	144	6.91	3.3	191
21-Jun-21	3.3	1.80	7.32	0.25	15.5	9.15	104	7.15	2.6	106
				1.00	15.5	9.13	103	7.15	2.5	106
				2.00	15.4	9.11	98	7.14	2.4	106
				3.00	15.3	9.10	91	7.13	2.3	107
28-Jun-21	3.3	1.60	7.03	0.25	19.1	8.78	126	7.32	1.8	135
				1.00	19.0	8.78	122	7.27	1.8	136
				2.00	18.2	8.75	109	7.25	1.7	136
05-Jul-21	3.3	0.00	7.15	0.25	21.0	8.70	127	7.08	5.1	216
				1.00	21.1	8.29	127	7.07	1.9	216
				2.00	21.2	8.20	127	7.07	1.8	217
12-Jul-21	2.8	2.10	7.49	0.25	23.1	8.15	104	7.38	1.1	231
				1.00	23.4	8.11	104	7.39	1.1	231
				2.00	23.4	8.10	104	7.39	1.1	231
19-Jul-21	2.7	1.90	7.04	0.25	20.6	8.03	105	7.31	1.1	146
				1.00	19.9	7.96	106	7.29	1.2	115
26-Jul-21	3.3	2.00	7.15	0.25	19.7	8.44	112	7.33	1.0	162
				1.00	19.7	8.28	114	7.30	1.0	161
				2.00	19.7	8.16	119	7.26	1.1	162
01-Aug-21	3.0	2.00	7.11	0.25	20.9	8.25	111	7.25	0.9	159
				1.00	20.9	8.22	111	7.23	0.8	160
				2.00	20.8	8.19	113	7.21	0.8	160
				3.00	20.8	8.13	135	7.06	0.8	162
09-Aug-21	3.3	2.00	7.09	0.25	20.5	8.17	110	7.26	0.9	80
				1.00	20.5	8.11	110	7.25	0.9	80
				2.00	20.5	8.05	111	7.24	1.0	80
16-Aug-21	2.7	1.90	7.52	0.25	19.9	8.59	81	7.02	1.2	207
				1.00	20.0	8.48	81	7.01	1.2	206
				2.00	19.8	8.28	82	6.96	1.5	205
23-Aug-21	2.7	1.70	7.40	0.25	17.0	8.32	114	6.78	2.2	198
				1.00	17.0	8.18	113	6.75	2.2	197
				2.00	17.0	8.13	113	6.74	2.1	197
30-Aug-21	2.8	2.00	7.35	0.25	16.8	8.51	99	7.01	0.1	132
				1.00	16.8	8.48	99	7.01	0.1	133
				2.00	16.6	8.25	103	7.01	0.1	134
06-Sep-21	3.1	2.00	7.20	0.25	16.3	8.47	104	6.99	2.8	206
				1.00	16.3	8.42	104	6.92	2.9	207
				2.00	16.3	8.40	105	6.87	2.8	209
				3.00	16.2	8.35	143	6.81	3.9	211
13-Sep-21	2.8	1.80	7.16	0.25	15.4	8.80	108	7.12	2.0	164
				1.00	15.4	8.80	108	7.12	1.9	164
				2.00	15.4	8.73	108	7.07	2.0	164
				3.00	15.4	8.68	109	7.02	2.0	164

Table A.25. Continued. Cold Lake Station CL7 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
20-Sep-21	3.2	1.50	7.23	0.25	13.4	9.25	108	6.91	2.9	203
				1.00	13.5	9.15	108	6.89	2.8	203
				2.00	13.5	9.03	108	6.89	2.9	203
				2.50	13.5	8.95	109	6.86	3.0	202
27-Sep-21	2.7	1.80	7.49	0.25	13.6	9.14	105	7.35	2.6	263
				1.00	13.6	9.11	105	7.35	2.6	258
				2.00	13.6	9.09	105	7.35	2.6	257
13-Oct-21	--	1.20	7.29	0.25	10.7	9.84	109	6.86	3.5	148
				1.00	10.7	9.65	109	6.83	3.5	150
				2.00	10.7	9.50	110	6.79	3.7	152
21-Oct-21	2.5	1.70	7.32	0.25	8.1	10.30	85	7.18	3.1	153
				1.00	8.1	10.25	85	7.14	3.0	155
				2.00	8.1	10.21	85	7.14	3.0	156
18-Mar-22	2.7	--	--	0.25	0.2	11.43	82	6.94	0.4	121
				1.00	0.4	11.33	87	6.99	0.5	124

Table A.26. Cold Lake Station CL8 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
17-Feb-21	4.5	--	6.60	0.25	0.1	11.61	85	6.65	0.4	172
				1.00	0.4	11.88	93	6.63	0.6	172
				2.00	0.9	11.81	95	6.64	0.7	173
01-Jun-21	--	1.00	7.39	0.25	12.0	10.20	127	7.16	5.3	187
				1.00	11.1	10.36	142	7.20	6.4	183
				2.00	10.1	10.36	121	7.22	4.7	182
				3.00	9.8	10.44	117	7.21	4.8	182
08-Jun-21	--	1.30	6.90	0.25	15.1	9.68	103	7.17	2.8	154
				1.00	15.1	9.69	103	7.18	2.8	154
				2.00	14.9	9.66	103	7.18	2.8	154
16-Jun-21	--	0.80	7.83	0.25	17.9	8.99	137	7.55	3.0	58
				1.00	17.8	9.02	132	7.52	2.8	68
				2.00	17.7	9.04	125	7.49	2.6	74
				3.00	17.2	9.11	110	7.43	2.3	77
21-Jun-21	3.9	1.30	7.73	0.25	15.2	9.17	81	7.54	2.1	76
				1.00	15.2	9.14	1	7.47	2.1	85
				2.00	15.1	9.11	81	7.30	2.1	88
				3.00	15.1	9.10	81	7.26	2.1	95
28-Jun-21	4.0	1.60	7.13	0.25	18.8	8.97	114	7.19	1.7	163
				1.00	18.7	8.90	113	7.17	1.7	163
				2.00	18.5	8.87	108	7.17	1.7	162
				3.00	18.0	8.83	107	7.17	1.7	162
05-Jul-21	4.1	1.90	7.13	0.25	20.9	8.32	120	6.32	1.8	231
				1.00	20.9	8.11	117	6.38	1.7	217
				2.00	20.9	8.09	114	6.72	1.7	216
				3.00	19.6	8.09	111	6.46	1.6	214

Table A.26. Continued. Cold Lake Station CL8 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
12-Jul-21	4.2	2.00	7.47	0.25	23.4	8.15	105	7.37	1.1	250
				1.00	23.3	8.13	106	7.36	1.1	248
				2.00	23.4	8.09	109	7.35	1.2	248
				3.00	21.5	7.99	104	7.28	1.2	248
19-Jul-21	3.8	2.00	7.13	0.25	20.4	8.55	105	7.22	1.2	137
				1.00	20.3	8.25	105	7.23	1.2	137
				2.00	19.8	8.12	105	7.24	1.2	137
				3.00	19.5	8.08	109	7.24	1.2	137
26-Jul-21	4.0	2.00	7.13	0.25	19.8	8.22	108	7.07	0.8	194
				1.00	19.8	8.20	109	7.04	0.8	195
				2.00	19.8	8.18	110	6.88	0.9	199
				3.00	19.7	8.13	118	6.83	1.1	206
01-Aug-21	4.0	2.00	7.22	0.25	20.9	8.20	107	7.11	0.9	178
				1.00	20.9	8.19	108	7.09	0.9	179
				2.00	20.9	8.17	108	6.83	0.9	195
				3.00	20.9	8.17	110	6.79	0.9	196
09-Aug-21	4.1	1.90	7.06	0.25	20.5	8.15	111	7.05	1.1	76
				1.00	20.5	8.09	112	7.06	1.2	75
				2.00	20.4	8.01	112	7.07	1.2	74
				3.00	20.4	7.98	112	7.08	1.2	74
16-Aug-21	3.6	2.00	7.70	0.25	20.0	8.28	81	7.18	1.0	193
				1.00	20.0	8.28	81	7.13	1.1	194
				2.00	19.7	8.26	79	7.09	1.2	194
				2.00	19.2	8.26	78	7.06	1.3	196
23-Aug-21	4.2	1.70	7.60	0.25	17.0	8.15	112	7.06	2.0	215
				1.00	17.0	8.12	112	7.04	2.0	216
				2.00	17.0	8.06	112	6.79	2.0	224
				3.00	17.0	8.04	112	6.77	2.0	228
30-Aug-21	4.0	2.00	7.52	0.25	16.8	8.48	99	6.79	0.1	130
				1.00	16.8	8.46	99	6.85	0.1	130
				2.00	16.8	8.36	105	6.87	0.2	132
				3.00	16.6	8.24	106	6.89	0.2	133
06-Sep-21	3.8	1.90	7.46	0.25	16.4	8.44	104	7.44	2.5	185
				1.00	16.4	8.39	104	7.17	2.5	186
				2.00	16.4	8.38	105	7.11	2.6	191
				3.00	16.4	8.38	106	6.94	2.6	197
13-Sep-21	3.7	1.80	7.53	0.25	15.5	8.63	109	7.12	1.9	134
				1.00	15.5	8.63	108	7.00	1.9	138
				2.00	15.5	8.62	108	6.98	1.8	139
				3.00	15.5	8.59	108	6.92	1.8	143
20-Sep-21	3.7	1.70	7.67	0.25	13.8	9.12	112	7.66	2.8	165
				1.00	13.7	8.75	110	7.15	2.8	188
				2.00	13.6	8.76	111	7.09	2.9	190
				3.00	13.5	8.76	110	7.02	2.8	192

Table A.26. Continued. Cold Lake Station CL8 - Field Measurements - 2021

Date	Station Depth (m)	Secchi (m)	Pen pH	Sample Depth (m)	Temp. (ºC)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	ORP (mV)
27-Sep-21	3.0	1.90	7.52	0.25	13.6	9.14	105	7.35	2.6	223
				1.00	13.6	9.11	105	7.35	2.6	223
				2.00	13.6	9.09	105	7.35	2.6	223
13-Oct-21	--	1.20	7.23	0.25	10.9	9.64	132	7.54	3.5	94
				1.00	10.8	9.50	116	7.44	3.6	99
				2.00	10.8	9.38	110	7.28	3.5	113
				3.00	10.8	9.33	110	7.10	3.4	133
21-Oct-21	3.5	1.50	7.34	0.25	8.1	10.29	85	7.08	3.1	173
				1.00	8.1	10.22	85	7.04	3.0	174
				2.00	8.1	10.17	85	7.05	3.1	174
				3.00	8.1	10.14	85	7.06	3.7	175
18-Mar-22	--	--	--	0.25	0.1	11.19	81	6.92	0.6	132
				1.00	0.2	11.03	87	6.92	0.0	134
				2.00	0.5	11.52	95	7.03	0.8	133
				3.00	0.9	11.74	99	7.10	1.1	133

DJRC

Appendix B – Laboratory Data

Table B.1. Camp Lake Discharge - Laboratory Data

Parameter/Sample Date	11-Jan-21	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21
Physical/Chemical (mg/L)																							
pH (pH units)	6.26	6.16	6.53	6.62	7.11	6.80	8.37	6.81	6.62	6.56	6.41	6.45	6.40	6.36	6.24	6.27	6.23	6.83	6.72	6.55	--	6.36	6.29
Alkalinity ($CaCO_3$)	38	37	9.7	11	15	15	22	16	21	17	17	15	16	13	13	12	12	9.1	9.1	8.1	--	6.3	7.5
Bicarbonate (HCO_3)	46	45	12	13	18	18	27	19	25	21	20	19	20	15	16	15	14	11	11	9.8	--	7.7	9.2
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0
Total Hardness ($CaCO_3$)	41.0	43.9	92.7	81.6	79.9	71.2	63.8	63.8	66.6	84.2	79.7	83.9	98.6	106	115	119	122	131	136	140	--	157	163
Hardness ($CaCO_3$)	36	40	93	80	79	73	64	67	65	80	77	86	89	110	110	120	130	150	140	150	--	--	190
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	154	--
Turbidity (NTU)	1.3	0.94	11	9.7	4.8	3.3	--	2.5	--	2.6	3.5	3.1	5.3	11	11	8.6	12	15	16	--	18	20	33
Total Suspended Solids (TSS)	<1.0	1.0	4.9	3.8	2.5	1.6	2.8	2.0	<1.0	<1.0	2.0	1.4	1.3	3.7	3.2	2.2	1.0	2.6	1.7	6.1	--	4.1	14
Dissolved Organic Carbon (C)	--	--	11	10	12	9.8	8.8	2.6	--	13	11	13	11	11	10	10	9.7	9.5	9.4	7.2	--	8.5	8.3
Total Organic Carbon (C)	--	--	10	10	12	10	12	12	15	12	9.0	15	11	12	10	11	9.2	9.3	9.5	9.8	--	8.8	11
Dissolved Sulphate (SO_4)	--	16	--	65	58	58	47	51	49	68	61	70	83	94	98	110	120	130	140	150	--	150	170
Acute Toxicity (LC_{50})	--	--	--	--	Sampled	--	--	--	Sampled	--	--	--	--	Sampled	--	--	Sampled	--	--	--	--	Sampled	--
Total Metals (mg/L)																							
Aluminum (Al)	0.070	0.064	0.13	0.15	0.10	0.087	0.065	0.063	0.060	0.069	0.076	0.12	0.074	0.14	0.091	0.064	0.081	0.099	0.091	0.21	--	0.12	0.12
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060
Arsenic (As)	0.00077	0.00077	0.00040	0.00054	0.00044	0.00039	0.00027	0.00032	0.00029	0.00041	0.00050	0.00036	0.00029	0.00048	0.00046	0.00044	0.00044	0.00045	0.00038	0.00049	--	0.00051	0.00039
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.010	<0.010	0.011	0.011	0.010	0.011	0.011	0.011	0.012	--	0.011	0.013
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023	<0.020	<0.020	--	0.043	<0.020
Cadmium (Cd)	0.00025	0.00026	0.00076	0.00094	0.00062	0.00059	0.00043	0.00040	0.00034	0.00039	0.00037	0.00031	0.00031	0.00043	0.00035	0.00039	0.00039	0.00036	0.00041	0.00050	--	0.00044	0.00043
Calcium (Ca)	11	12	28	24	24	21	19	19	20	25	24	25	30	33	36	37	38	41	42	44	--	50	52
Chromium (Cr)	0.0012	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.00035	0.0015	0.0016	0.00072	0.00064	0.00039	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00053	<0.00030	<0.00030	<0.00030	0.00030	0.00050	--	0.00043	0.00036
Copper (Cu)	0.0097	0.011	0.036	0.042	0.030	0.031	0.022	0.018	0.015	0.019	0.018	0.017	0.015	0.017	0.017	0.016	0.017	0.016	0.018	0.021	--	0.019	0.018
Iron (Fe)	0.59	0.55	7.5	5.6	3.5	2.7	2.3	1.9	1.9	2.3	1.8	2.8	3.5	5.8	6.3	5.9	6.6	6.8	6.7	7.9	--	8.1	7.7
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	0.00024	0.00027	0.00031	0.00021	0.00026	0.00045	--	0.00047	0.00038
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020
Magnesium (Mg)	3.2	3.2	5.8	5.1	5.1	4.5	4.1	4.1	4.2	5.2	4.9	5.1	5.7	6.0	6.2	6.6	6.4	6.9	7.3	7.2	--	8.0	8.0
Manganese (Mn)	0.031	0.036	0.20	0.16	0.095	0.086	0.050	0.042	0.038	0.056	0.039	0.038	0.044	0.061	0.079	0.058	0.059	0.062	0.063	0.077	--	0.068	0.072
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00057	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020
Nickel (Ni)	<0.00050	0.00090	0.0017	0.0021	0.0015	0.0015	0.0011	0.0011	0.0011	0.00092	0.0017	0.0014	0.00094	0.0012	0.0013	0.0011	0.0012	0.0011	0.0012	0.0012	--	0.0014	0.001
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Potassium (K)	1.3	1.6	2.3	2.2	2.1	1.9	1.9	1.8	1.9	2.3	2.1	2.2	2.5	2.6	2.8	3.1	3.0	3.2	3.2	3.3	--	3.7	3.5
Selenium (Se)	0.00039	<0.00020	0.00025	0.00025	<0.00020	0.00034	<0.00020	<0.00020	<0.00020	<0.00020	0.0003	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	0.00022	0.00021	--	0.00025	<0.00020
Silicon (Si)	2.2	2.1	2.2	1.9	1.7	1.7	1.6	1.7	1.7	1.7	1.4	1.5	1.4	1.6	1.6	1.4	1.5	1.6	1.4	1.7	--	1.6	1.6
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010
Sodium (Na)	1.7	1.8	2.0	2.0	2.0	1.8	1.9	1.8	1.9	2.1	2.0	2.1	2.2	2.2	2.3	2.4	2.3	2.3	2.4	2.6	--	2.7	2.7
Strontium (Sr)	0.024	0.022	0.036	0.034	0.029	0.030	0.031	0.029	0.029	0.037	0.035	0.038	0.035	0.041	0.044	0.039	0.045	0.045	0.041	0.043	--	0.045	0.053
Sulphur (S)	3.9	4.7	27	22	19	18	15	15	16	21	19	22	26	29	34	34	38	42	42	46	--	48	51
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Titanium (Ti)	0.0011	0.0012	0.0031	0.0042	0.0019	<0.0010	0.0013	0.0020	0.0015	0.0028	0.0025	0.0030	0.0026	0.0047	0.0034	0.0023	0.0030	0.0045	0.0041	0.013	--	0.0055	0.0054
Uranium (U)	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010
Vanadium (V)	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Zinc (Zn)	0.077	0.087	0.25	0.30	0.19	0.19	0.14	0.12	0.10	0.11	0.10	0.10	0.079	0.11	0.10	0.098	0.11	0.10	0.12	0.14	--	0.13	0.12

Table B.1. Continued. Camp Lake Discharge - Laboratory Data

Parameter/Sample Date	11-Jan-21	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21
Dissolved Metals (mg/L)																							
Aluminum (Al)	0.049	0.049	0.065	0.068	0.055	0.054	0.044	0.040	0.041	0.040	0.033	0.035	0.042	0.046	0.041	0.042	0.041	0.038	0.035	0.032	--	0.029	0.032
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060
Arsenic (As)	0.00056	0.00038	0.00021	0.00044	0.00032	0.00027	<0.00020	0.00028	0.00031	0.00034	0.00037	0.00025	0.00033	0.00040	<0.0010	0.00031	0.00042	0.00031	0.00034	0.00030	--	0.00024	0.00029
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	0.010	0.012	0.011	0.011	--	0.012	0.012
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	0.029	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.031	<0.020	<0.020	<0.020	<0.020	<0.020	--	0.027	<0.020
Cadmium (Cd)	0.00023	0.00022	0.00071	0.00063	0.00054	0.00056	0.00037	0.00035	0.00029	0.00030	0.00025	0.00026	0.00029	0.00027	0.00034	0.00029	0.00033	0.00029	0.00028	0.00031	--	0.00029	0.00035
Calcium (Ca)	10	11	28	24	23	21	19	20	20	24	23	26	27	35	35	38	40	48	44	47	--	49	60
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.00034	0.0014	0.00071	<0.00030	0.00036	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030
Copper (Cu)	0.010	0.0092	0.028	0.026	0.024	0.027	0.020	0.016	0.014	0.016	0.015	0.014	0.014	0.012	0.014	0.014	0.013	0.012	0.012	0.011	--	0.010	0.010
Iron (Fe)	0.34	0.37	5.0	3.9	2.4	2.2	1.9	1.5	1.2	1.4	1.8	2.1	2.4	4.1	3.0	4.7	4.9	5.4	4.2	5.7	--	3.9	2.8
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020
Magnesium (Mg)	2.7	2.8	5.9	5.1	5.0	4.7	4.2	4.3	3.9	5.0	4.6	5.2	5.1	6.3	6.0	6.8	6.9	8.2	7.0	7.7	--	7.6	9.0
Manganese (Mn)	0.024	0.032	0.18	0.13	0.076	0.067	0.011	0.018	0.010	0.029	0.0051	0.011	0.027	0.044	0.065	0.039	0.043	0.047	0.052	0.056	--	0.063	0.067
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	0.0027	<0.00020
Nickel (Ni)	0.00055	0.00076	0.0016	0.0015	0.0010	0.00097	0.00086	0.0010	0.0011	0.00064	0.00094	0.00087	0.0011	0.00091	<0.0025	0.00097	0.00080	0.00089	0.00095	0.00072	--	0.00085	0.00069
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Potassium (K)	1.3	1.3	2.3	2.1	2.1	2.1	1.9	1.9	1.8	2.1	2.1	2.3	2.4	2.8	2.6	2.9	3.1	3.7	3.2	3.9	--	3.4	4.1
Selenium (Se)	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	0.00031	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020
Silicon (Si)	1.6	1.8	1.9	1.7	1.5	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.1	1.2	1.2	1.3	1.3	1.3	1.1	1.3	--	1.4	1.4
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010
Sodium (Na)	1.5	1.7	2.1	2.1	2.0	1.9	1.9	1.9	1.8	2.0	2.0	2.1	2.1	2.4	2.2	2.4	2.4	2.7	2.4	2.7	--	2.6	2.9
Strontium (Sr)	0.023	0.024	0.037	0.031	0.030	0.029	0.031	0.030	0.029	0.034	0.034	0.037	0.037	0.043	0.043	0.044	0.042	0.051	0.048	0.044	--	0.052	0.059
Sulphur (S)	3.5	4.5	26	22	19	19	15	16	16	20	21	21	23	26	29	33	38	32	37	43	--	46	47
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	0.0011	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	--	<0.0010	0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010
Zinc (Zn)	0.076	0.069	0.25	0.22	0.17	0.18	0.13	0.11	0.10	0.095	0.082	0.074	0.078	0.071	0.080	0.085	0.083	0.087	0.084	0.077	--	0.082	0.092

Table B.2. Camp Lake Station NB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Physical/Chemical (mg/L)																	Duplicate								
pH (pH units)	6.16	6.53	6.61	7.10	6.76	6.81	6.96	6.65	6.60	6.45	6.52	6.38	6.27	6.22	6.25	6.23	6.14	6.83	6.66	6.57	--	6.39	6.28	6.22	6.58
Alkalinity ($CaCO_3$)	37	10	11	14	14	15	15	20	17	16	18	16	14	11	12	12	11	8.8	7.4	7.0	--	5.9	7.0	4.6	12
Bicarbonate (HCO_3)	45	12	14	17	17	18	19	24	20	20	22	19	17	14	14	15	14	11	9.0	8.6	--	7.2	8.5	5.6	15
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	39.8	96.8	79.3	79.6	72.6	65.6	66.9	68.9	76.0	80.7	83.9	97.9	109	109	118	124	120	129	132	139	--	160	161	171	175
Hardness ($CaCO_3$)	37	90	79	77	73	69	67	65	75	79	86	88	100	110	120	130	130	150	140	140	--	--	190	180	190
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	147	--	--	--
Turbidity (NTU)	1.5	12	8.7	4.0	3.4	--	2.1	2.1	2.8	3.3	3.0	4.7	9.8	8.5	4.7	12	11	16	11	--	16	20	25	--	18
Total Suspended Solids (TSS)	<1.0	5.1	3.9	2.1	<1.0	2.2	1.3	1.3	<1.0	2.4	<1.0	5.5	2.9	1.9	<1.0	<1.0	1.5	2.7	1.4	1.6	--	2.5	4.1	<1.0	1.2
Dissolved Organic Carbon (C)	--	10	11	11	9.4	9.3	2.5	2.9	12	11	13	12	10	9.8	11	9.9	11	10	9.6	8.9	--	8.9	8.6	8.1	9.2
Total Organic Carbon (C)	--	10	11	12	11	12	12	15	14	10	16	16	12	11	11	9.7	10	9.6	9.6	10	--	9.0	10	8.9	11
Dissolved Sulphate (SO_4)	9.4	--	63	57	57	47	49	47	52	59	70	81	92	96	110	120	120	130	140	140	--	150	160	160	180
Total Metals (mg/L)																									
Aluminum (Al)	0.07	0.14	0.11	0.10	0.092	0.066	0.068	0.069	0.064	0.069	0.098	0.075	0.13	0.082	0.070	0.076	0.087	0.088	0.090	0.095	--	0.082	0.087	0.061	0.071
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	0.0013
Arsenic (As)	0.00057	0.00038	0.00044	0.00031	0.00046	0.00033	0.00036	0.00028	0.00039	0.00043	0.00031	0.00040	0.00049	0.00039	0.00039	0.00038	0.00040	0.00052	0.00049	0.00034	--	0.00040	0.00040	0.00027	0.00037
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	0.011	0.010	<0.010	0.011	0.011	0.011	0.011	0.011	--	0.010	0.012	0.011	0.015
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.063	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.024	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00021	0.00079	0.00081	0.00064	0.00062	0.00046	0.00039	0.00034	0.00034	0.00030	0.00032	0.00032	0.00038	0.00033	0.00037	0.00040	0.00038	0.00038	0.00040	0.00044	--	0.00043	0.00040	0.00047	0.00
Calcium (Ca)	11	29	24	23	21	19	20	20	23	24	25	30	33	34	36	39	38	40	41	44	--	50	51	54	54
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0019	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0015	0.0014	0.00076	0.00067	0.00043	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00031	0.00032	--	0.00033	0.00033	0.00036	0.00036
Copper (Cu)	0.0098	0.036	0.037	0.031	0.034	0.022	0.020	0.017	0.018	0.015	0.017	0.015	0.017	0.016	0.017	0.017	0.018	0.016	0.018	0.018	--	0.017	0.017	0.018	0.018
Iron (Fe)	0.72	7.4	5.3	3.5	2.8	2.4	2.0	1.8	2.1	1.8	2.8	3.6	5.9	6.2	5.8	5.9	6.1	6.9	6.8	7.1	--	8.7	7.4	6.4	5.2
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	0.00031	<0.00020	<0.00020	0.00023	0.00021	0.00023	0.00030	0.00031	0.00030	0.00036	0.00033	--	0.00032	0.00037	0.00038	0.00041
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.1	6.2	5.0	5.2	4.6	4.3	4.3	4.4	4.7	4.9	5.1	5.7	6.2	6.1	6.6	6.8	6.4	6.9	7.2	7.3	--	8.4	8.0	8.4	9.6
Manganese (Mn)	0.028	0.19	0.15	0.095	0.090	0.051	0.045	0.034	0.047	0.038	0.036	0.045	0.060	0.068	0.055	0.053	0.053	0.060	0.063	0.066	--	0.069	0.070	0.070	0.077
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020	0.00037	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	0.00024
Nickel (Ni)	0.00069	0.0017	0.0019	0.0015	0.0018	0.0011	0.0012	0.0012	0.00082	0.0017	0.0013	0.0013	0.0011	0.0012	0.0012	0.00094	0.0011	0.0011	0.0014	0.0011	--	0.0012	0.0017	0.0012	0.0012
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	2.4	2.1	2.1	2.0	1.9	2.0	2.0	2.1	2.1	2.2	2.6	2.7	2.6	3.0	3.2	2.8	3.1	3.1	3.4	--	3.8	3.5	3.8	4.6
Selenium (Se)	0.00029	0.00027	0.00020	0.00022	0.00032	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	0.00022	0.00030	0.00021	0.00021	0.00033	<0.00020	0.00022	<0.00020	<0.00020	--	0.00022	<0.00020	<0.00020	0.00029
Silicon (Si)	2.1	2.2	1.9	1.7	1.7	1.7	1.7	1.8	1.5	1.4	1.5	1.4	1.6	1.5	1.4	1.4	1.4	1.6	1.4	1.5	--	1.6	1.5	1.5	1.8
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.8	2.1	2.0	2.0	1.9	2.0	2.0	1.9	1.9	2.0	2.0	2.2	2.3	2.2	2.4	2.4	2.2	2.4	2.4	2.6	--	2.8	2.7	2.9	3.6
Strontium (Sr)	0.022	0.037	0.034	0.029	0.031	0.032	0.031	0.031	0.034	0.063	0.037	0.035	0.042	0.042	0.039	0.041	0.043	0.046	0.041	0.044	--	0.046	0.053	0.055	0.061
Sulphur (S)	3.0	26	21	18	19	16	16	16	19	19	22	26	30	32	34	38	37	42	41	46	--	49	50	55	54
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0017	0.0036	0.0017	0.0017	0.0023	0.0017	0.0027	0.0015	0.0022	0.0024	0.0012	0.0020	0.0042	0.0031	0.0019	0.0025	0.0029	0.0026	0.0033	0.0026	--	0.0040	0.0031	0.0020	0.0024
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.073	0.25	0.27	0.19	0.19	0.14	0.13	0.11	0.10	0.092	0.089	0.081	0.10	0.097	0.10	0.098	0.11	0.10	0.12	0.12	--	0.12	0.12	0.13	0.17

Table B.2. Continued. Camp Lake Station NB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																									
Aluminum (Al)	0.044	0.063	0.055	0.055	0.050	0.042	0.039	0.045	0.042	0.034	0.033	0.039	0.046	0.027	0.043	0.042	0.040	0.039	0.032	0.041	--	0.031	0.032	0.030	0.036
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00048	0.00029	0.00024	0.00031	0.00033	0.00027	0.00031	0.00026	0.00036	0.00041	0.00027	0.00031	0.00038	<0.0010	0.00036	0.00042	0.00037	0.00038	0.00035	0.00025	--	0.00036	0.00031	<0.00020	0.00037
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.011	0.010	0.010	--	0.011	0.012	0.011	0.015
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00019	0.00072	0.00061	0.00058	0.00051	0.00037	0.00038	0.00035	0.00030	0.00026	0.00027	0.00025	0.00029	0.00031	0.00031	0.00031	0.00029	0.00033	0.00032	0.00034	--	0.00033	0.00035	0.00032	0.00
Calcium (Ca)	10	27	23	23	21	20	20	19	22	24	26	27	32	34	37	39	41	46	42	45	--	47	60	58	58
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0015	0.00076	<0.00030	0.00036	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.008	0.029	0.024	0.024	0.026	0.02	0.016	0.016	0.016	0.015	0.014	0.012	0.013	0.013	0.015	0.014	0.013	0.014	0.013	0.013	--	0.012	0.011	0.011	0.013
Iron (Fe)	0.32	5.0	3.6	2.4	2.2	2.0	1.4	1.3	1.4	1.3	2.1	2.5	4.2	2.5	5.0	5.1	5.5	5.6	4.2	5.7	--	3.8	3.2	2.9	2.0
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	0.00023
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.8	5.7	5.1	4.9	4.7	4.5	4.3	3.9	4.7	4.8	5.1	5.1	5.6	6.2	6.7	6.9	7.1	8.1	7.1	7.6	--	7.4	9.3	8.9	9.9
Manganese (Mn)	0.024	0.18	0.12	0.071	0.067	0.011	0.019	0.018	0.026	0.0058	0.009	0.035	0.043	0.057	0.043	0.045	0.047	0.060	0.056	0.062	--	0.064	0.072	0.071	0.076
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	0.00032	<0.00020	0.00023	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00078	0.0016	0.0013	0.0011	0.0012	0.0010	0.0010	0.0012	0.00070	0.00091	0.00096	0.00085	0.0011	<0.0025	0.00088	0.00082	0.00091	0.0010	0.0010	0.00072	--	0.00092	0.00084	0.00085	0.0013
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.3	2.3	2.2	2.1	2.0	2.0	1.9	1.9	2.0	2.1	2.2	2.3	2.6	2.7	2.9	3.1	3.3	3.7	3.2	3.7	--	3.3	4.2	4.1	5.0
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	0.00028	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.0	1.9	1.7	1.5	1.6	1.5	1.5	1.4	1.4	1.2	1.2	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.1	1.3	--	1.3	1.4	1.3	1.6
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.8	2.1	2.0	2.0	1.9	2.0	1.9	1.8	1.9	2.0	2.1	2.1	2.2	2.3	2.4	2.4	2.5	2.7	2.3	2.6	--	2.5	3.1	3.1	3.9
Strontium (Sr)	0.024	0.036	0.031	0.029	0.029	0.032	0.030	0.030	0.032	0.035	0.036	0.037	0.041	0.042	0.048	0.042	0.043	0.050	0.047	0.043	--	0.051	0.061	0.057	0.064
Sulphur (S)	3.0	25	22	19	20	16	15	15	19	19	21	23	26	30	34	38	39	40	37	43	--	44	46	54	56
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	0.0011	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.052	0.26	0.20	0.18	0.18	0.13	0.11	0.10	0.097	0.085	0.076	0.068	0.070	0.078	0.085	0.085	0.078	0.085	0.092	0.088	--	0.091	0.092	0.10	0.16

Table B.3. Camp Lake Station NB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	18-Mar-22
Physical/Chemical (mg/L)						Duplicate				Duplicate												Duplicate			
pH (pH units)	6.16	6.51	6.64	7.17	6.86	7.05	6.88	6.82	6.62	6.54	6.57	6.46	6.51	6.41	6.35	6.23	6.26	6.25	6.88	6.68	6.56	6.57	6.29	6.25	6.53
Alkalinity ($CaCO_3$)	40	10	13	15	16	16	15	16	18	17	20	16	20	18	13	12	12	12	9.4	8.1	7.2	7.0	6.3	7.3	11
Bicarbonate (HCO_3)	49	12	16	18	19	19	19	20	22	21	25	19	25	21	16	15	15	15	11	9.9	8.8	8.5	7.7	8.9	13
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	38.4	84.1	72.3	70.6	64.6	68.3	59.1	64.9	66.3	65.5	70.2	77.5	79.9	94.2	106	109	113	118	124	132	135	139	154	157	182
Hardness ($CaCO_3$)	35	85	71	71	64	69	64	59	44	63	66	76	86	87	110	99	120	120	140	140	140	150	--	180	180
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	148	--	--
Turbidity (NTU)	0.99	13	7.8	3.8	3.1	3.6	--	2.7	2.3	2.2	2.8	3.4	3.4	4.4	10	9.3	7.8	13	14	15	--	--	18	23	18
Total Suspended Solids (TSS)	<1.0	6.5	4.0	1.3	1.3	3.5	2.6	1.9	1.3	<1.0	<1.0	2.8	1.4	<1.0	2.7	2.1	2.1	1.7	1.9	1.2	1.1	<0.99	3.1	3.0	<1.0
Dissolved Organic Carbon (C)	--	--	--	--	--	--	--	--	--	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon (C)	--	--	--	--	--	--	--	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Sulphate (SO_4)	8.3	--	54	52	47	50	44	47	46	50	49	57	67	79	93	94	110	110	120	140	140	140	140	160	180
Total Metals (mg/L)																									
Aluminum (Al)	0.058	0.13	0.11	0.095	0.10	0.091	0.071	0.078	0.070	0.067	0.070	0.069	0.10	0.090	0.12	0.087	0.072	0.077	0.090	0.085	0.095	0.084	0.080	0.091	0.075
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00067	0.00038	0.00045	0.00039	0.00052	0.00032	0.00023	0.00038	0.00032	0.00035	0.00035	0.00031	0.00030	0.00029	0.00043	0.00058	0.00045	0.00064	0.00052	0.00038	0.00038	0.00042	0.00045	0.00036	0.00027
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.011	<0.010	0.010	0.011	0.011	0.011	0.011	<0.010	0.012	0.015
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.028	<0.020	<0.020	<0.020	0.026	<0.020	0.026	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00020	0.00073	0.00078	0.00059	0.00061	0.00061	0.00039	0.00042	0.00034	0.00037	0.00035	0.00036	0.00032	0.00037	0.00042	0.00035	0.00036	0.00038	0.00035	0.00038	0.00047	0.00042	0.00044	0.00043	0.00052
Calcium (Ca)	10	25	21	21	19	20	17	19	20	19	21	23	24	29	33	34	35	37	39	41	42	44	48	50	57
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0042	<0.0010	0.0049	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0015	0.0015	0.00069	0.00064	0.0006	0.00036	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00032	0.00033	0.00032	0.00036	0.00037
Copper (Cu)	0.0078	0.034	0.038	0.029	0.032	0.028	0.020	0.019	0.017	0.018	0.018	0.018	0.017	0.018	0.016	0.017	0.016	0.018	0.017	0.018	0.018	0.018	0.018	0.018	0.017
Iron (Fe)	0.47	7.4	4.6	2.9	2.3	2.3	2.1	1.9	1.6	1.6	1.9	1.8	2.9	3.4	5.8	6.2	5.7	6.5	6.4	6.8	7.1	7.0	7.9	7.2	5.4
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	0.00024	0.00022	0.00029	0.00027	0.00027	0.00039	0.00035	0.00036	0.00040	0.00031
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.0	5.5	4.6	4.7	4.2	4.5	3.9	4.2	4.2	4.2	4.4	4.8	4.9	5.6	6.0	6.1	6.3	6.3	6.7	7.2	7.2	7.3	8.0	7.9	9.9
Manganese (Mn)	0.028	0.18	0.13	0.083	0.079	0.079	0.047	0.040	0.032	0.034	0.040	0.036	0.034	0.039	0.058	0.064	0.051	0.055	0.050	0.059	0.060	0.058	0.061	0.063	0.079
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00061	<0.00020	0.00076	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00097	0.0018	0.0019	0.0014	0.0014	0.0013	0.0022	0.0012	0.0012	0.0012	0.0014	0.00096	0.0012	0.0010	0.0012	0.0016	0.0010	0.0011	0.0014	0.0013	0.00095	0.0011	0.0013	0.00092	0.0013
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	2.3	2.0	2.0	1.8	2.2	1.7	1.9	1.9	1.9	2.1	2.1	2.2	2.5	2.7	2.7	2.9	2.9	3.0	3.2	3.3	3.3	3.7	3.5	4.7
Selenium (Se)	<0.00020	0.00022	0.00025	0.00021	0.00032	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	0.00030	<0.00020	0.00026	0.00026	<0.00020	<0.00020	0.00022	0.00022	0.00023	<0.00020	<0.00020
Silicon (Si)	2.1	2.1	1.8	1.6	1.8	1.9	1.6	1.7	1.6	1.6	1.6	1.4	1.5	1.4	1.7	1.5	1.4	1.5	1.5	1.4	1.5	1.4	1.5	1.6	1.8
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.7	2.0	1.9	1.9	1.8	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.6	2.6	2.8	2.7	3.5
Strontium (Sr)	0.021	0.035	0.032	0.028	0.029	0.031	0.030	0.030	0.030	0.031	0.032	0.034	0.035	0.035	0.042	0.042	0.037	0.044	0.044	0.041	0.043	0.043	0.045	0.052	0.062
Sulphur (S)	2.7	23	18	16	16	16	14	15	15	15	17	19	20	25	29	32	32	37	39	41	45	44	47	49	56
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0013	0.0032	0.0030	0.0024	0.0021	0.0021	0.0012	0.0012	<0.0010	0.0013	0.0016	0.0022	0.0082	0.0030	0.0043	0.0032	0.0024	0.0026	0.0041	0.0034	0.0032	0.0039	0.0023	0.0028	0.0019
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	0.00019	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.056	0.24	0.27	0.18	0.19	0.18	0.13	0.14	0.11	0.11	0.10	0.095	0.092	0.089	0.10	0.095	0.099	0.11	0.10	0.12	0.12	0.12	0.12	0.12	0.17

Table B.3. Continued. Camp Lake Station NB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																									
Aluminum (Al)	0.044	0.063	0.057	0.052	0.046	0.049	0.042	0.041	0.044	0.037	0.043	0.035	0.035	0.044	0.047	0.038	0.044	0.045	0.044	0.036	0.033	0.040	0.030	0.017	0.030
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00062	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00041	0.00031	0.00032	0.00034	0.00026	0.00027	0.00022	0.00034	0.00040	0.00028	0.00037	0.00052	0.00028	0.00040	0.00030	<0.0010	0.00037	0.00031	0.00023	0.00033	0.00028	0.00034	0.00029	0.00024	0.00032
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.011	0.011	0.011	0.011	0.011	0.012	0.014
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.035	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00016	0.00066	0.00056	0.00053	0.00047	0.00049	0.00038	0.00034	0.00012	0.00025	0.00027	0.00029	0.00025	0.00029	0.00031	0.00029	0.00031	0.00033	0.00031	0.00033	0.00033	0.00034	0.00033	0.00035	0.00043
Calcium (Ca)	9.5	25	21	21	19	20	19	18	13	19	20	23	26	26	35	31	37	39	45	42	45	47	47	56	58
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0015	0.00051	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0071	0.027	0.024	0.024	0.025	0.024	0.019	0.016	0.0095	0.012	0.015	0.016	0.015	0.015	0.013	0.013	0.014	0.014	0.013	0.013	0.012	0.013	0.011	0.011	0.012
Iron (Fe)	0.31	5.2	3.4	2.0	1.7	1.8	1.9	1.3	0.59	1.4	1.3	1.7	2.2	2.3	4.3	3.8	5.0	5.0	5.0	4.3	5.7	5.7	4.0	0.61	2.3
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	0.00021	<0.00020	0.00022	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.6	5.5	4.7	4.6	4.3	4.5	4.3	3.8	3.1	4.0	4.3	4.7	5.2	5.1	6.4	5.5	6.7	6.8	7.9	7.1	7.8	7.8	7.5	8.8	9.6
Manganese (Mn)	0.024	0.17	0.11	0.051	0.050	0.050	0.015	0.014	<0.0040	0.018	0.023	0.0049	0.0088	0.027	0.045	0.040	0.037	0.038	0.043	0.049	0.056	0.053	0.058	0.062	0.075
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0025	<0.00020	<0.00020
Nickel (Ni)	0.00068	0.0015	0.0013	0.0013	0.00090	0.0013	0.0012	0.00090	0.00080	0.00074	0.00067	0.00095	0.00091	0.00088	0.00098	<0.0025	0.00089	0.00081	0.0011	0.00071	0.00066	0.00089	0.0010	0.00078	0.0012
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.2	2.3	2.0	2.1	1.9	2.1	1.9	1.7	1.5	1.9	2.0	2.1	2.3	2.4	2.9	2.4	2.9	3.1	3.6	3.2	3.9	3.7	3.4	3.9	4.8
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.9	1.9	1.7	1.5	1.6	1.7	1.6	1.3	1.2	1.4	1.5	1.3	1.2	1.1	1.2	1.2	1.3	1.3	1.4	1.1	1.2	1.3	1.4	1.4	1.6
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.6	2.1	1.9	2.0	1.8	2.0	2.0	1.7	1.8	1.9	1.9	2.0	2.1	2.1	2.4	2.1	2.4	2.4	2.8	2.4	2.7	2.8	2.6	3.0	3.6
Strontium (Sr)	0.023	0.035	0.029	0.029	0.027	0.031	0.031	0.029	0.027	0.029	0.033	0.034	0.037	0.037	0.044	0.040	0.043	0.042	0.048	0.047	0.044	0.046	0.051	0.058	0.062
Sulphur (S)	2.7	23	20	16	16	15	15	14	6.9	14	16	19	20	22	26	29	34	38	38	36	41	41	44	49	56
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0011	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	0.0013	<0.0050	0.0013	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.046	0.24	0.19	0.16	0.16	0.16	0.12	0.11	0.048	0.086	0.090	0.086	0.075	0.076	0.071	0.077	0.087	0.086	0.084	0.092	0.083	0.093	0.087	0.087	0.15

Table B.4. Camp Lake Station CB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Physical/Chemical (mg/L)								**Duplicate**								**Duplicate**										
pH (pH units)	6.17	6.47	6.67	7.16	6.84	6.85	6.88	6.88	6.59	6.59	6.57	6.50	6.30	6.33	6.19	6.24	6.24	6.20	6.75	6.56	6.45	–	6.26	6.16	6.06	6.51
Alkalinity ($CaCO_3$)	34	11	14	15	15	16	17	17	18	20	23	17	17	10	10	12	12	10	7.4	6.4	5.6	–	4.9	5.5	3.1	9.2
Bicarbonate (HCO_3)	41	13	17	18	19	20	20	21	22	25	28	21	20	12	13	15	14	13	9.0	7.9	6.8	–	6.0	6.7	3.8	11
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	34.4	76.9	67.4	69.5	56.7	50.2	55.8	59.2	59.0	64.5	66.8	71.8	81.2	92.7	93.6	95.7	95.7	94.9	105	110	116	–	131	139	145	166
Hardness ($CaCO_3$)	31	79	66	69	58	55	60	67	60	66	68	76	74	86	95	100	99	100	120	110	120	–	–	160	150	170
Dissolved Hardness ($CaCO_3$)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	122	–	–	–
Turbidity (NTU)	0.66	11	6.7	3.7	2.9	–	2.7	2.3	2.2	2.9	3.5	3.7	4.9	11	9.6	8.5	8.4	12	14	17	–	18	20	23	–	21 (2)
Total Suspended Solids (TSS)	<1.0	4.7	4.3	2.0	1.7	2.1	1.0	<1.0	2.5	1.1	2.0	1.5	<1.0	3.7	1.5	<1.0	<0.95	1.8	3.7	2.3	<1.0	–	1.6	4.6	1.9	1.4
Dissolved Organic Carbon (C)	–	9.9	11	12	10	11	13	11	13	14	13	13	12	11	8.9	11	11	10	10	9.7	8.7	–	8.7	8.1	8.2	9.7 (1)
Total Organic Carbon (C)	–	11	12	13	12	13	12	11	17	15	11	17	12	11	12	11	12	9.4	9.9	9.8	9.9	–	8.9	9.5	9.0	9.8
Dissolved Sulphate (SO_4)	<1.0	–	49	48	43	36	43	42	40	44	25	59	65	82	82	81	87	96	100	110	120	–	120	130	140	170
Total Metals (mg/L)																										
Aluminum (Al)	0.061	0.11	0.12	0.090	0.075	0.070	0.070	0.070	0.063	0.064	0.063	0.061	0.066	0.15	0.096	0.10	0.072	0.075	0.099	0.098	0.12	–	0.096	0.11	0.14	0.12
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	–	<0.00060	<0.00060	<0.00060	0.00077
Arsenic (As)	0.00072	0.00041	0.00055	0.00036	0.00032	0.00024	0.00041	0.00050	0.00036	0.00035	0.00037	0.00027	0.00030	0.00040	0.00053	0.00044	0.00037	0.00046	0.00044	0.00042	0.00040	–	0.00030	0.00038	0.00037	0.00036
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	0.012	0.011	0.010	0.010	0.010	0.011	0.011	0.012	–	0.011	0.013	0.013	0.015
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.025	<0.020	<0.020	0.076	<0.020	<0.020	<0.020	<0.020	0.022	<0.020	<0.020	–	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00014	0.00069	0.00081	0.00058	0.00046	0.00039	0.00042	0.00038	0.00031	0.00030	0.00026	0.00026	0.00026	0.00040	0.00034	0.00034	0.00035	0.00035	0.00036	0.00040	0.00048	–	0.00044	0.00046	0.00046	0.00052
Calcium (Ca)	9.1	22	20	20	16	14	16	17	17	19	20	21	24	28	28	29	29	29	32	33	36	–	40	43	45	51
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0013	0.0014	0.00077	0.00056	0.00036	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00034	–	0.0003	0.00033	0.00035	<0.00030
Copper (Cu)	0.0060	0.031	0.037	0.027	0.025	0.017	0.018	0.017	0.014	0.015	0.014	0.013	0.013	0.015	0.016	0.018	0.017	0.016	0.017	0.019	0.019	–	0.019	0.021	0.023	0.021
Iron (Fe)	0.32	7.1	4.1	2.9	2.5	1.8	1.5	1.5	1.5	2.0	1.9	3.4	4.1	7.5	7.0	6.8	6.5	6.9	7.7	7.8	8.2	–	9.4	8.8	9.4	5.7
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00033	0.00022	0.00028	0.00025	0.00030	0.00026	0.00033	0.00046	–	0.00045	0.00043	0.00049	0.0020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	–	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.8	5.1	4.4	4.7	3.9	3.5	3.7	3.9	3.9	4.2	4.3	4.6	5.0	5.7	5.5	5.8	5.7	5.4	6.1	6.5	6.5	–	7.5	7.5	7.8	9.1
Manganese (Mn)	0.023	0.17	0.13	0.086	0.071	0.041	0.042	0.043	0.033	0.042	0.032	0.038	0.037	0.061	0.062	0.054	0.051	0.049	0.054	0.054	0.057	–	0.058	0.064	0.069	0.070
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	–	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00073	0.0016	0.0018	0.0014	0.00094	0.0012	0.0013	0.0014	0.0011	0.00098	0.0022	0.0012	0.00096	0.0012	0.0011	0.0014	0.0011	0.00083	0.0012	0.0010	0.0012	–	0.0011	0.0018	0.0021	0.0011
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	–	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	2.2	1.9	1.9	1.7	1.6	1.7	1.7	1.8	2.0	2.0	2.2	2.4	2.8	2.7	2.9	2.9	2.9	3.1	3.1	3.5	–	3.9	3.9	4.0	4.4
Selenium (Se)	<0.00020	0.00025	0.00033	0.00022	0.00030	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	0.00020	<0.00020	0.00023	0.00030	<0.00020	0.00093	<0.00020	0.00025	<0.00020	<0.00020	<0.00020	–	0.00024	<0.00020	<0.00020	0.00021
Silicon (Si)	2.2	2.2	1.9	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.2	1.4	1.4	1.9	1.6	1.5	1.4	1.4	1.6	1.4	1.5	–	1.5	1.6	1.6	1.7
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	–	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.7	1.9	1.9	2.0	1.7	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.3	2.3	2.4	2.2	2.4	2.5	2.8	–	2.9	3.0	3.2	3.3
Strontium (Sr)	0.021	0.033	0.031	0.028	0.027	0.027	0.027	0.027	0.028	0.031	0.038	0.033	0.032	0.040	0.040	0.036	0.035	0.039	0.041	0.039	0.042	–	0.043	0.052	0.053	0.058
Sulphur (S)	1.2	21	17	15	13	10	12	12	13	15	14	18	21	26	28	27	27	29	33	35	39	–	40	44	47	52
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	–	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0014	0.0027	0.0030	0.0020	0.0025	0.0021	0.0015	0.0017	0.0028	0.0035	0.0018	0.0021	0.0020	0.0058	0.0022	0.0048	0.0020	0.0032	0.0045	0.0049	0.0048	–	0.0040	0.0042	0.0054	0.0053
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	–	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.041	0.21	0.26	0.18	0.15	0.11	0.12	0.12	0.098	0.087	0.086	0.077	0.071	0.092	0.095	0.098	0.10	0.098	0.098	0.12	0.13	–	0.13	0.14	0.16	0.16

Table B.4. Continued. Camp Lake Station CB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																										
Aluminum (Al)	0.041	0.061	0.048	0.056	0.045	0.037	0.039	0.046	0.040	0.037	0.029	0.032	0.034	0.047	0.036	0.041	0.045	0.041	0.040	0.041	0.038	--	0.033	0.031	0.029	0.025
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	0.00079	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00049	0.00032	0.00032	0.00030	0.00034	0.00025	0.00035	0.00038	0.00040	0.00037	0.00032	0.00035	0.00035	0.00036	<0.0010	0.00037	0.00036	0.00041	0.00028	0.00037	0.00027	--	0.00030	0.00031	0.00027	0.00032
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.010	0.010	0.010	0.012	0.011	0.011	--	0.011	0.014	0.012	0.014
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.031	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.037	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00011	0.00063	0.00046	0.00050	0.00043	0.00032	0.00034	0.00033	0.00030	0.00025	0.00027	0.00025	0.00026	0.00028	0.00031	0.00034	0.00028	0.00032	0.00033	0.00032	0.00035	--	0.00032	0.00033	0.00035	0.00048
Calcium (Ca)	8.2	23	19	20	16	16	17	19	18	19	20	23	22	26	29	31	30	32	37	35	37	--	38	49	47	53
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0013	0.00037	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0047	0.025	0.021	0.021	0.022	0.016	0.015	0.016	0.014	0.014	0.013	0.013	0.012	0.012	0.014	0.016	0.015	0.014	0.015	0.014	0.014	--	0.013	0.012	0.012	0.010
Iron (Fe)	0.21	4.8	3.0	1.9	2.0	1.6	1.2	1.4	1.2	1.4	1.5	2.7	3.1	5.9	5.2	6.3	5.9	5.8	6.5	5.5	8.2	--	5.3	6.4	4.9	2.6
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	0.00021	<0.00020	0.00023	0.00021	0.00023	--	<0.00020	0.00021	0.00021	0.00063
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.4	5.2	4.4	4.5	4.0	3.9	4.1	4.6	3.8	4.3	4.3	4.8	4.6	5.1	5.7	5.9	5.9	6.2	7.1	6.4	6.9	--	6.7	8.5	8.0	8.9
Manganese (Mn)	0.019	0.16	0.097	0.061	0.052	0.011	0.030	0.022	0.022	0.023	0.0063	0.020	0.032	0.047	0.045	0.044	0.042	0.041	0.051	0.048	0.058	--	0.058	0.066	0.065	0.067
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	0.0026	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00060	0.0012	0.0012	0.00091	0.00071	0.00080	0.00090	0.0010	0.0012	0.00070	0.00095	0.00097	0.00084	0.00092	<0.0025	0.00075	0.00091	0.00080	0.0011	0.00096	0.00084	--	0.00097	0.00100	0.00090	0.0011
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.2	2.2	1.9	2.0	1.8	1.7	1.8	2.2	1.8	1.9	2.1	2.3	2.3	2.6	2.7	3.1	2.8	3.1	3.6	3.3	3.8	--	3.5	4.4	4.1	4.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.0	1.9	1.7	1.5	1.6	1.6	1.5	1.6	1.5	1.4	0.88	1.2	1.2	1.2	1.3	1.4	1.4	1.3	1.3	1.1	1.3	--	1.4	1.4	1.3	1.4
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.6	2.1	1.9	1.9	1.8	1.9	1.9	2.1	1.9	1.9	2.0	2.1	2.0	2.2	2.3	2.5	2.4	2.4	2.7	2.5	2.7	--	2.6	3.3	3.2	3.4
Strontium (Sr)	0.022	0.034	0.028	0.028	0.026	0.029	0.029	0.029	0.030	0.031	0.033	0.035	0.034	0.038	0.040	0.040	0.040	0.039	0.045	0.045	0.042	--	0.048	0.057	0.054	0.058
Sulphur (S)	1.2	21	17	16	14	11	13	12	13	15	12	18	18	22	27	29	29	31	33	31	36	--	37	40	46	53
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0050	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.029	0.22	0.17	0.15	0.15	0.10	0.10	0.11	0.092	0.083	0.075	0.077	0.064	0.071	0.082	0.094	0.083	0.083	0.095	0.097	0.095	--	0.096	0.10	0.12	0.15

Table B.5. Camp Lake Station CB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	4-Oct-21	4-Oct-21	13-Oct-21	18-Mar-22	18-Mar-22
Physical/Chemical (mg/L)					Duplicate						Duplicate				Duplicate									Duplicate			Duplicate
pH (pH units)	6.16	6.52	6.62	7.17	7.13	6.84	6.82	6.95	6.71	6.57	6.49	6.48	6.50	6.39	6.27	6.30	6.20	6.24	6.21	6.78	6.60	6.48	6.37	6.30	6.20	6.63	6.60
Alkalinity ($CaCO_3$)	34	9.8	13	15	15	13	15	16	20	17	17	17	18	16	17	11	10	12	11	7.6	6.4	6.0	5.4	5.1	6.4	16	16
Bicarbonate (HCO_3)	42	12	16	19	18	16	19	20	25	21	21	20	21	19	21	14	12	14	14	9.3	7.8	7.4	6.6	6.2	7.8	20	20
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	31.6	90.2	72.7	69.7	64.1	67.7	55.5	63.0	60.4	70.0	68.3	67.9	73.0	83.9	80.3	93.7	95.3	101	101	107	113	119	133	120	132	173	147
Hardness ($CaCO_3$)	28	89	75	69	68	68	59	61	59	73	64	71	76	79	87	88	93	120	110	130	110	120	--	--	150	180	180
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	124	128	--	--	--
Turbidity (NTU)	0.39	13	7.9	3.4	3.7	3.2	--	2.4	2.8	3.4	3.2	4.4	3.6	4.4	4.3	11	11	8.8	12	16	16	--	21	19	24	27	24
Total Suspended Solids (TSS)	<1.0	5.7	2.9	1.5	4.4	1.7	3.0	<1.0	2.5	<1.0	2.2	3.1	<1.0	1.4	1.7	4.2	2.2	<1.0	<1.0	2.3	1.6	<1.0	3.7	<1.0	3.6	3.4	2.6
Dissolved Sulphate (SO_4)	<1.0	--	56	48	50	55	38	44	41	49	61	52	62	69	70	81	82	92	98	100	110	120	120	140	140	170	170
Total Metals (mg/L)																											
Aluminum (Al)	0.050	0.14	0.13	0.11	0.098	0.090	0.079	0.078	0.063	0.072	0.081	0.057	0.077	0.076	0.082	0.15	0.11	0.089	0.074	0.12	0.096	0.12	0.11	0.098	0.11	0.098	0.11
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00065	0.00030	0.00057	0.00042	0.00041	0.00040	0.00031	0.00037	0.00042	0.00044	0.00031	0.00039	0.00029	0.00036	0.00041	0.00048	0.00059	0.00042	0.00057	0.00066	0.00043	0.00042	0.00040	0.00041	0.00035	0.00048	0.00043
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.011	0.011	0.011	0.011	0.012	0.012	0.011	<0.010	0.013	0.016	0.017
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00016	0.00080	0.0010	0.00062	0.00068	0.00062	0.00042	0.00039	0.00032	0.00033	0.00030	0.00029	0.00029	0.00028	0.00030	0.00041	0.00034	0.00038	0.00040	0.00038	0.00040	0.00048	0.00051	0.00040	0.00046	0.00052	0.00044
Calcium (Ca)	8.3	27	22	20	19	20	16	18	18	21	20	20	22	25	24	28	29	31	31	32	34	37	41	37	41	53	57
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0017	0.0018	0.00082	0.00081	0.00077	0.00041	0.00032	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00036	<0.00030	<0.00030	0.00049	0.00057
Copper (Cu)	0.0052	0.036	0.041	0.029	0.032	0.030	0.019	0.019	0.015	0.016	0.016	0.014	0.014	0.014	0.015	0.016	0.015	0.019	0.018	0.019	0.020	0.020	0.021	0.019	0.020	0.019	0.021
Iron (Fe)	0.28	8.0	4.3	2.8	2.6	2.6	2.1	1.8	1.5	2.2	2.0	2.6	3.2	3.6	3.7	7.2	7.2	6.3	6.7	7.5	7.8	8.0	9.0	7.6	8.3	6.5	6.2
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00031	0.00031	0.00029	0.00029	0.00040	0.00037	0.00039	0.00046	0.00040	0.00044	0.00055	0.00057
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.6	5.8	4.6	4.7	4.3	4.4	3.8	4.3	3.9	4.5	4.4	4.3	4.6	5.1	5.0	5.7	5.7	6.0	5.8	6.2	6.6	6.6	7.6	6.6	7.1	9.6	10
Manganese (Mn)	0.021	0.21	0.14	0.087	0.090	0.085	0.047	0.047	0.033	0.043	0.040	0.036	0.035	0.034	0.038	0.058	0.065	0.048	0.046	0.051	0.053	0.056	0.055	0.053	0.059	0.097	0.092
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022
Nickel (Ni)	0.00072	0.0018	0.0023	0.0015	0.0016	0.0012	0.0015	0.0012	0.0011	0.00090	0.00087	0.0012	0.0011	0.00091	0.00099	0.0012	0.0016	0.0017	0.00093	0.0020	0.0013	0.0013	0.0011	0.0012	0.0013	0.0014	0.0014
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.3	2.4	2.1	2.0	1.9	2.0	1.7	2.0	1.8	2.2	2.1	2.0	2.2	2.5	2.4	2.8	2.8	3.0	3.1	3.1	3.3	3.4	3.9	3.5	3.6	4.7	5.0
Selenium (Se)	<0.00020	0.00026	0.00023	0.00021	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00025	<0.00020	0.00020	<0.00020	0.00024	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	0.00024	0.00025
Silicon (Si)	2.0	2.3	1.8	1.7	1.8	1.7	1.7	1.8	1.5	1.6	1.6	1.5	1.4	1.3	1.5	1.7	1.6	1.4	1.4	1.6	1.4	1.5	1.5	1.4	1.6	2.0	1.9
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.6	2.1	2.0	2.0	1.8	1.8	1.9	2.0	1.8	2.0	2.0	1.9	2.0	2.2	2.1	2.3	2.3	2.5	2.4	2.4	2.6	2.8	2.9	2.6	2.9	3.8	4.3
Strontium (Sr)	<0.020	0.037	0.032	0.028	0.029	0.030	0.029	0.030	0.029	0.033	0.033	0.031	0.034	0.033	0.036	0.040	0.040	0.037	0.041	0.042	0.040	0.042	0.044	0.040	0.049	0.062	0.071
Sulphur (S)	1.1	26	19	15	15	17	12	14	13	17	17	17	19	21	21	26	28	29	31	33	35	39	41	39	42	52	56
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0010	0.0039	0.0029	0.0019	0.0024	0.0017	0.0020	0.0029	<0.0010	0.0025	0.0027	0.0030	0.0017	0.0025	0.0015	0.0066	0.0049	0.0037	0.0026	0.0065	0.0045	0.0046	0.0021	0.0041	0.0040	0.0033	0.0030
Uranium (U)	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.037	0.25	0.31	0.19	0.21	0.19	0.12	0.12	0.097	0.097	0.097	0.079	0.083	0.074	0.079	0.096	0.092	0.11	0.11	0.11	0.13	0.13	0.14	0.13	0.13	0.18	0.21

Table B.5. Continued. Camp Lake Station CB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	4-Oct-21	4-Oct-21	13-Oct-21	18-Mar-22	18-Mar-22
Dissolved Metals (mg/L)																											
Aluminum (Al)	0.042	0.061	0.048	0.052	0.052	0.049	0.040	0.041	0.041	0.040	0.032	0.030	0.030	0.040	0.045	0.046	0.035	0.047	0.040	0.040	0.039	0.035	0.036	0.035	0.039	0.025	0.038
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.0011	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00048	0.00026	0.00038	0.00033	0.00023	0.00024	0.00022	0.00031	0.00043	0.00042	0.00039	0.00040	0.00032	0.00038	0.00039	0.00041	<0.0010	0.00040	0.00035	0.00030	0.00038	0.00027	0.00024	0.00033	0.00025	0.00025	0.00035
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.010	0.011	0.011	0.014	0.011	0.012	0.012	0.013	0.013	0.016
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.044	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	0.036	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00011	0.00068	0.00053	0.00051	0.00049	0.00057	0.00036	0.00032	0.00031	0.00028	0.00030	0.00027	0.00026	0.00028	0.00028	0.00031	0.00029	0.00033	0.00031	0.00031	0.00032	0.00035	0.00036	0.00037	0.00037	0.00046	0.00043
Calcium (Ca)	7.6	26	22	20	20	20	17	18	17	21	19	21	23	24	26	27	28	35	32	38	35	38	39	40	47	55	58
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0015	0.00064	<0.00030	<0.00030	0.00049	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00039	0.00046
Copper (Cu)	0.0045	0.027	0.021	0.022	0.022	0.025	0.017	0.014	0.014	0.015	0.013	0.013	0.014	0.013	0.013	0.013	0.013	0.016	0.015	0.015	0.015	0.014	0.015	0.014	0.014	0.011	0.014
Iron (Fe)	0.19	5.3	3.1	1.8	1.9	2.0	1.7	1.3	1.2	1.4	1.6	2.0	2.5	2.8	3.1	5.5	4.8	5.9	5.5	6.5	5.3	8.2	4.7	5.3	4.1	2.4	2.3
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.0010	0.00022	0.00021	0.00025	0.00022	0.00023	0.00021	0.00021	0.00024	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.2	5.7	4.9	4.6	4.5	4.5	4.1	4.1	3.8	4.8	4.1	4.5	4.7	4.9	5.3	5.2	5.6	7.0	6.2	7.4	6.5	7.0	6.7	6.8	8.1	9.4	9.9
Manganese (Mn)	0.018	0.19	0.13	0.063	0.061	0.067	0.014	0.022	0.021	0.025	0.025	0.010	0.019	0.027	0.026	0.046	0.046	0.036	0.034	0.055	0.046	0.054	0.052	0.056	0.060	0.090	0.086
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00058	0.0017	0.0012	0.00089	0.0017	0.0010	0.00086	0.00090	0.0011	0.00063	0.0011	0.00090	0.0011	0.00095	0.0010	0.00091	<0.0025	0.00087	0.00084	0.0010	0.00096	0.00086	0.00094	0.0010	0.0011	0.0013	0.0014
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.0	2.3	2.1	2.0	2.0	2.1	1.8	1.8	1.8	2.2	2.0	2.1	2.3	2.5	2.7	2.7	2.7	3.3	3.2	3.8	3.3	3.9	3.4	3.8	4.2	4.9	5.2
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.8	1.9	1.7	1.5	1.6	1.6	1.6	1.5	1.6	1.4	1.4	1.3	1.2	1.2	1.3	1.2	1.2	1.3	1.3	1.5	1.1	1.3	1.3	1.4	1.4	1.7	1.7
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.4	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.8	2.0	1.8	2.0	2.1	4.0	2.3	2.2	2.3	2.8	2.4	2.9	2.5	2.7	2.6	2.9	3.2	3.9	4.5
Strontium (Sr)	0.020	0.036	0.030	0.028	0.028	0.028	0.030	0.029	0.029	0.032	0.032	0.033	0.035	0.051	0.038	0.039	0.040	0.045	0.039	0.048	0.045	0.043	0.048	0.052	0.056	0.063	0.070
Sulphur (S)	1.1	25	19	15	16	18	12	13	14	17	17	18	19	19	20	23	26	29	32	34	31	37	38	38	42	53	55
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0050	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.029	0.25	0.18	0.16	0.16	0.18	0.11	0.096	0.091	0.087	0.079	0.076	0.078	0.071	0.075	0.076	0.077	0.092	0.088	0.092	0.097	0.096	0.11	0.11	0.12	0.15	0.18

Table B.6. Camp Lake Station SB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Physical/Chemical (mg/L)																						Duplicate			
pH (pH units)	6.13	6.55	6.64	7.19	6.85	6.88	6.89	6.60	6.62	6.46	6.44	6.32	6.30	6.19	6.24	6.16	6.72	6.55	6.45	--	6.29	6.05	6.16	5.98	6.64
Alkalinity ($CaCO_3$)	38	11	14	17	16	20	18	20	20	17	17	14	10	11	12	10	7.1	5.8	5.5	--	5.0	5.2	4.4	2.8	22
Bicarbonate (HCO_3)	46	13	18	21	19	25	22	25	25	21	20	17	13	13	14	12	8.7	7.0	6.7	--	6.1	6.3	5.4	3.4	27
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	32.5	75.0	65.5	66.2	53.6	46.3	52.2	61.9	58.9	67.3	68.9	82.7	87.0	88.3	93.9	95.9	101	110	117	--	133	135	132	145	173
Hardness ($CaCO_3$)	29	74	66	67	55	50	52	60	55	66	71	74	92	93	100	100	120	110	120	--	--	150	150	150	180
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	124	--	--	--	--
Turbidity (NTU)	0.57	11	6.8	3.7	3.4	--	2.2	2.2	2.9	3.7	3.7	4.8	11	11	8.3	10	16	15	--	20	21	23	23	--	16
Total Suspended Solids (TSS)	<1.0	5.1	4.7	1.5	<1.0	1.9	1.1	1.3	<1.0	2.3	1.9	1.9	2.8	1.7	<1.0	<1.0	2.9	1.0	1.9	--	2.7	2.5	3.4	1.0	<1.0
Dissolved Organic Carbon (C)	--	12	11	12	11	12	2.7	2.7	14	11	13	12	11	9.9	12	9.5	10	9.6	8.0	--	8.8	9.0	8.7	8.3	13
Total Organic Carbon (C)	--	11	10	13	12	13	11	12	13	11	16	13	13	13	10	10	10	9.9	10	--	9.1	11	9.4	8.7	14
Dissolved Sulphate (SO_4)	<1.0	--	48	56	39	29	37	42	44	47	55	65	77	78	86	95	110	110	120	--	120	130	140	140	160
Total Metals (mg/L)																									
Aluminum (Al)	0.056	0.12	0.099	0.080	0.078	0.063	0.064	0.060	0.071	0.10	0.075	0.069	0.13	0.085	0.069	0.073	0.081	0.098	0.10	--	--	0.15	0.084	0.11	0.12
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060	0.00093
Arsenic (As)	0.00067	0.00040	0.00052	0.00034	0.00052	0.00027	0.00041	0.00029	0.00041	0.00041	0.00031	0.00030	0.00048	0.00040	0.00037	0.00049	0.00044	0.00039	0.00039	--	0.00034	0.00030	0.00038	0.00036	0.00035
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	0.011	0.010	0.010	0.011	0.011	0.011	0.012	--	0.011	0.012	0.013	0.013	0.017
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00013	0.00064	0.00062	0.00051	0.00045	0.00029	0.00033	0.00031	0.00026	0.00030	0.00025	0.00031	0.00037	0.00033	0.00034	0.00036	0.00034	0.00037	0.00042	--	0.00041	0.00044	0.00043	0.00047	0.00053
Calcium (Ca)	8.6	22	19	19	15	13	15	18	17	20	20	25	26	27	28	29	31	33	36	--	41	42	41	45	45
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0012	0.0011	0.00066	0.00046	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	0.00031	<0.00030	0.00031	0.00039
Copper (Cu)	0.0049	0.029	0.029	0.026	0.023	0.016	0.015	0.014	0.014	0.015	0.013	0.014	0.015	0.015	0.016	0.017	0.016	0.019	0.017	--	0.019	0.020	0.018	0.022	0.014
Iron (Fe)	0.31	7.0	3.9	2.7	2.4	1.6	1.5	1.7	2.0	1.9	3.5	4.1	7.3	7.1	6.4	7.3	7.6	8.1	8.3	--	9.9	8.7	8.2	9.0	4.7
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00027	0.00025	0.00026	0.00027	0.00026	0.00036	0.00034	--	0.00037	0.00045	0.00041	0.00046	0.00044
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.7	5.0	4.3	4.5	3.7	3.3	3.6	4.1	4.0	4.3	4.4	5.2	5.3	5.3	5.6	5.5	5.8	6.5	6.6	--	7.6	7.3	7.1	7.7	8.4
Manganese (Mn)	0.023	0.16	0.12	0.080	0.066	0.037	0.041	0.038	0.042	0.032	0.039	0.039	0.059	0.063	0.051	0.052	0.053	0.056	0.058	--	0.063	0.064	0.060	0.069	0.095
Molybdenum (Mo)	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00065	0.0013	0.0015	0.0013	0.0010	0.0014	0.0010	0.0011	0.00092	0.00095	0.0019	0.00088	0.0011	0.0011	0.0011	0.00088	0.0013	0.0013	0.00083	--	0.00091	0.0012	0.00091	0.0012	0.0010
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	2.1	1.9	1.9	1.6	1.5	1.7	1.9	1.9	2.0	2.1	2.5	2.6	2.6	2.8	2.9	2.9	3.2	3.4	--	4.0	3.8	3.6	4.0	4.0
Selenium (Se)	0.00028	0.00021	0.00025	0.00024	0.00026	<0.00020	<0.00020	<0.00020	<0.00020	0.00030	<0.00020	<0.00020	0.00021	0.00020	0.00020	0.00024	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	0.00022
Silicon (Si)	2.1	2.2	1.9	1.7	1.7	1.8	1.6	1.8	1.6	1.2	1.5	1.4	1.7	1.5	1.4	1.5	1.5	1.5	1.5	--	1.6	1.6	1.5	1.6	1.9
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.6	2.0	1.9	1.9	1.7	1.7	1.7	1.9	1.9	2.0	2.0	2.2	2.2	2.2	2.4	2.3	2.3	2.5	2.7	--	3.0	3.1	2.9	3.1	3.4
Strontium (Sr)	<0.020	0.033	0.030	0.027	0.026	0.026	0.026	0.029	0.030	0.034	0.033	0.033	0.038	0.038	0.035	0.040	0.040	0.039	0.041	--	0.044	0.050	0.049	0.053	0.055
Sulphur (S)	1.1	20	16	14	12	8.9	11	14	12	13	17	21	24	26	27	30	32	34	39	--	42	43	41	47	42
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0014	0.0026	0.0019	0.0017	0.0022	<0.0010	0.0019	0.0034	0.0016	0.0017	0.0021	0.0023	0.0063	0.0044	0.0029	0.0027	0.0041	0.0049	0.0039	--	0.0036	0.0048	0.0033	0.0045	0.0061
Uranium (U)	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.040	0.20	0.21	0.17	0.15	0.097	0.10	0.089	0.080	0.085	0.081	0.075	0.090	0.093	0.099	0.10	0.096	0.12	0.11	--	0.12	0.13	0.13	0.15	0.15

Table B.6. Continued. Camp Lake Station SB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																									
Aluminum (Al)	0.042	0.055	0.049	0.044	0.041	0.038	0.038	0.041	0.035	0.027	0.029	0.037	0.046	0.036	0.044	0.038	0.040	0.034	0.036	--	0.032	0.039	0.018	0.031	0.025
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00045	0.00030	0.00034	0.00036	0.00035	0.00024	0.00045	0.00030	0.00032	0.00031	0.00033	0.00036	0.00036	<0.0010	0.00037	0.00034	0.00034	0.00028	0.00029	--	0.00033	0.00030	<0.00020	<0.00020	0.00038
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.011	0.010	0.012	0.011	0.011	--	0.012	0.013	0.013	0.012	0.016
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	0.029	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.0001	0.00056	0.00052	0.00046	0.00042	0.00028	0.00031	0.00028	0.00025	0.00024	0.00025	0.00026	0.00029	0.00029	0.00030	0.00034	0.00036	0.00032	0.00035	--	0.00033	0.00037	0.00038	0.00034	0.00050
Calcium (Ca)	7.7	22	19	19	16	14	15	18	16	20	21	22	28	28	30	31	37	35	36	--	38	47	47	46	45
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0011	0.00042	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030	<0.00030	<0.00030	0.00030
Copper (Cu)	0.0043	0.024	0.022	0.021	0.021	0.014	0.013	0.014	0.012	0.013	0.013	0.012	0.012	0.013	0.014	0.014	0.015	0.015	0.014	--	0.013	0.014	0.012	0.012	0.0089
Iron (Fe)	0.2	5.0	2.7	1.9	1.9	1.3	1.1	1.2	1.3	1.5	2.9	3.1	5.9	5.2	6.1	6.1	5.2	5.6	7.5	--	5.3	5.6	2.2	4.8	1.9
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	0.00023	<0.00020	0.00023	--	0.00021	0.00021	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.3	5.0	4.4	4.5	3.8	3.7	3.5	3.8	3.7	4.3	4.5	4.6	5.6	5.6	6.0	6.1	7.2	6.3	6.7	--	6.8	8.1	8.1	7.9	8.0
Manganese (Mn)	0.017	0.14	0.088	0.059	0.049	0.0063	0.021	0.021	0.023	0.0098	0.015	0.032	0.046	0.049	0.039	0.044	0.053	0.050	0.057	--	0.061	0.066	0.065	0.066	0.090
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00063	0.0012	0.0012	0.0011	0.00066	0.00087	0.00089	0.0010	<0.00050	0.0010	0.00085	0.00080	0.0010	<0.0025	0.00088	0.00065	0.0011	0.0010	0.00092	--	0.0010	0.0013	0.00083	0.00095	0.0011
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	2.1	1.9	2.0	1.8	1.6	1.6	1.9	1.7	2.0	2.1	2.2	2.7	2.6	2.8	3.1	3.6	3.3	3.8	--	3.5	4.2	4.2	4.0	4.1
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.9	1.9	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.1	1.3	1.2	1.2	1.3	1.3	1.3	1.3	1.1	1.3	--	1.4	1.5	1.4	1.3	1.6
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.5	1.9	1.9	2.0	1.8	1.8	1.7	1.8	1.8	2.0	2.0	2.0	2.3	2.3	2.4	2.4	2.8	2.5	2.7	--	2.7	3.1	3.2	3.2	3.5
Strontium (Sr)	0.021	0.032	0.028	0.029	0.025	0.027	0.027	0.029	0.028	0.032	0.033	0.034	0.039	0.039	0.041	0.039	0.045	0.044	0.040	--	0.048	0.054	0.055	0.053	0.054
Sulphur (S)	1.1	20	16	14	13	8.9	11	12	12	14	17	18	22	25	26	30	32	30	37	--	37	42	41	47	40
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.028	0.21	0.17	0.15	0.14	0.10	0.089	0.091	0.072	0.072	0.070	0.066	0.072	0.078	0.084	0.085	0.096	0.096	0.095	--	0.096	0.11	0.10	0.12	0.13

Table B.7. Camp Lake Station SB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	18-Mar-22
Physical/Chemical (mg/L)				**Duplicate**									**Duplicate**							**Duplicate**					
pH (pH units)	6.16	6.57	6.64	6.66	7.21	6.87	6.87	6.93	6.63	6.57	6.43	6.51	6.46	6.38	6.33	6.19	6.30	6.06	6.73	6.73	6.45	6.44	6.24	6.18	6.61
Alkalinity ($CaCO_3$)	37	11	14	14	18	16	20	20	18	21	18	21	17	18	13	9.5	13	9.7	7.4	7.1	5.3	5.7	4.8	6.2	16
Bicarbonate (HCO_3)	45	14	17	16	22	19	24	25	22	25	22	25	20	22	16	12	16	12	9.1	8.7	6.5	7.0	5.8	7.5	20
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	32.1	71.5	67.0	71.0	59.7	50.6	47.0	51.8	55.7	57.7	64.9	69.9	67.9	77.0	78.8	90.7	84.8	97.8	102	100	109	117	134	135	146
Hardness ($CaCO_3$)	30	74	68	64	59	51	52	57	55	65	67	69	70	70	78	89	97	100	120	110	110	120	--	150	140
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	123	--	--
Turbidity (NTU)	0.59	10	6.7	6.7	3.9	2.9	--	2.4	2.1	3.2	3.6	3.7	4.2	4.9	10	11	7.7	11	15	17	20	--	24	27	20
Total Suspended Solids (TSS)	<1.0	3.6	4.4	3.4	1.2	2.1	2.5	1.1	2.7	1.1	3.2	<1.0	1.5	1.3	2.2	2.9	<0.97	1.5	2.1	2.1	2.2	<0.97	2.4	2.4	1.1
Dissolved Sulphate (SO_4)	<1.0	--	50	54	37	34	31	35	38	40	46	54	54	60	69	77	73	95	100	110	120	120	120	140	140
Total Metals (mg/L)																									
Aluminum (Al)	0.057	0.11	0.11	0.085	0.077	0.086	0.069	0.065	0.065	0.063	0.060	0.061	0.066	0.11	0.14	0.092	0.061	0.072	0.092	0.092	0.076	0.13	0.10	0.10	0.063
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.0010
Arsenic (As)	0.00048	0.00033	0.00044	0.00032	0.00040	0.00045	<0.00020	0.00033	0.00038	0.00044	<0.0010	0.00038	0.00030	0.00041	0.00040	0.00070	0.00041	0.00044	0.00048	0.00040	0.00039	0.00045	0.00046	0.00039	0.00037
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.010	<0.010	0.011	0.011	<0.010	0.011	0.011	0.010	0.011	0.012	0.011	0.013	0.015
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.11	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00013	0.00063	0.00075	0.00065	0.00050	0.00043	0.00036	0.00033	0.00031	0.00025	0.00028	0.00026	0.00025	0.00027	0.00033	0.00032	0.00034	0.00033	0.00035	0.00036	0.00037	0.00051	0.00046	0.00043	0.00044
Calcium (Ca)	8.5	21	20	21	17	14	13	15	16	17	19	21	20	23	23	27	25	30	31	30	33	36	41	42	55
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	0.0015	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0011	0.0013	0.00094	0.00048	0.00046	0.00035	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00034	0.00035	<0.00030	0.00040
Copper (Cu)	0.0053	0.028	0.034	0.027	0.023	0.023	0.016	0.015	0.014	0.015	0.017	0.013	0.014	0.013	0.014	0.014	0.015	0.017	0.016	0.016	0.018	0.020	0.020	0.019	0.022
Iron (Fe)	0.32	6.5	4.1	4.5	2.4	2.3	1.7	1.5	1.4	2.0	2.9	3.3	3.4	3.9	6.3	7.5	5.5	7.4	8.1	7.9	8.3	8.8	11	8.7	5.8
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	0.00037	<0.00020	<0.00020	0.00026	0.0003	0.00022	0.00028	0.00030	0.00027	0.00030	0.00046	0.00038	0.0004	0.00030
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.7	4.8	4.3	4.7	4.2	3.6	3.3	3.5	3.7	3.9	4.3	4.4	4.3	4.9	5.0	5.5	5.2	5.7	5.9	5.9	6.5	6.6	7.7	7.2	10
Manganese (Mn)	0.023	0.15	0.12	0.13	0.069	0.060	0.039	0.039	0.031	0.041	0.041	0.040	0.040	0.041	0.056	0.068	0.051	0.054	0.057	0.057	0.058	0.062	0.066	0.063	0.097
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020
Nickel (Ni)	0.00058	0.0014	0.0020	0.0014	0.0013	0.0011	0.0014	0.00089	0.0014	0.00082	<0.0025	0.0010	0.0016	0.0010	0.00098	0.00065	0.0010	0.0011	0.0010	0.00082	0.00093	0.0010	0.0016	0.0010	0.0015
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.3	1.9	1.9	1.9	1.8	1.6	1.5	1.6	1.7	1.8	2.0	2.0	2.1	2.3	2.4	2.7	2.7	3.0	3.0	3.0	3.2	3.5	4.0	3.7	4.8
Selenium (Se)	<0.00020	0.00022	0.00025	<0.00020	<0.00020	0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	0.00021
Silicon (Si)	2.1	2.1	1.8	1.9	1.7	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.4	1.4	1.7	1.7	1.4	1.5	1.6	1.4	1.4	1.6	1.6	1.6	1.8
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.6	1.9	1.9	2.0	1.8	1.7	1.8	1.8	1.8	1.8	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.4	2.3	2.3	2.5	2.8	3.0	3.0	3.8
Strontium (Sr)	<0.020	0.031	0.031	0.032	0.026	0.026	0.026	0.027	0.028	0.029	0.031	0.079	0.031	0.031	0.035	0.039	0.033	0.041	0.041	0.037	0.039	0.042	0.044	0.050	0.063
Sulphur (S)	1.1	19	16	17	11	11	9.3	10	12	12	15	16	16	19	21	27	23	30	33	32	35	39	42	42	55
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0011	0.0029	0.0026	0.0026	0.0017	0.0022	0.0027	0.0024	0.0016	0.0033	<0.0050	0.0045	0.076	0.0023	0.0066	0.0035	0.0013	0.0032	0.0033	0.0063	0.0018	0.0058	0.0033	0.0049	0.0025
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	0.00011	<0.00010	<0.00010	<0.00010	0.00015	<0.00010	<0.00010	0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.043	0.19	0.24	0.20	0.15	0.14	0.10	0.09	0.089	0.08	0.084	0.084	0.074	0.079	0.084	0.087	0.098	0.11	0.10	0.11	0.11	0.13	0.13	0.13	0.21

Table B.7. Continued. Camp Lake Station SB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																									
Aluminum (Al)	0.042	0.054	0.049	0.048	0.044	0.040	0.037	0.038	0.039	0.035	0.028	0.031	0.047	0.041	0.044	0.036	0.043	0.038	--	0.040	0.031	0.036	0.032	0.016	0.043
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00045	0.00027	0.00034	0.00036	0.00031	0.00031	0.00027	0.00031	0.00034	0.00038	0.00049	0.00036	0.00037	0.00036	0.00040	<0.0010	0.00033	0.00037	0.00028	0.00036	0.00037	0.00031	0.00036	0.00025	0.00031
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.010	0.011	0.012	0.011	0.011	0.011	0.012	0.014	0.016
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00010	0.00060	0.00049	0.00053	0.00043	0.00035	0.00028	0.00030	0.00027	0.00021	0.00023	0.00025	0.00024	0.00026	0.00027	0.00030	0.00026	0.00030	0.00038	0.00035	0.00032	0.00033	0.00034	0.00035	0.00039
Calcium (Ca)	8	21	20	19	17	14	15	16	16	19	19	20	21	21	23	27	29	31	37	33	35	36	38	46	58
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0011	0.00046	0.00058	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00045
Copper (Cu)	0.0043	0.024	0.021	0.022	0.019	0.019	0.014	0.014	0.013	0.012	0.013	0.012	0.013	0.012	0.012	0.013	0.013	0.014	0.016		0.014	0.014	0.013	0.012	0.017
Iron (Fe)	0.22	4.9	2.9	2.5	1.5	1.7	1.4	1.2	1.1	1.3	2.2	2.7	2.7	2.8	5.3	4.9	5.3	6.2	6.9	5.8	6.0	8.2	5.5	1.7	3.0
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	0.00024	0.00021	<0.00020	0.00024	0.00022	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.4	4.9	4.4	4.1	4.0	3.6	3.7	4.0	3.6	4.4	4.4	4.4	4.6	4.4	4.8	5.4	6.0	6.1	7.2	6.1	6.4	6.7	6.7	7.9	10
Manganese (Mn)	0.017	0.14	0.10	0.093	0.048	0.040	0.0085	0.021	0.019	0.024	0.014	0.018	0.011	0.033	0.043	0.054	0.034	0.047	0.047	0.054	0.053	0.061	0.064	0.067	0.096
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0027	<0.00020	<0.00020
Nickel (Ni)	0.00051	0.0013	0.0014	0.0012	0.00077	0.00075	0.00071	0.00094	0.00099	0.00051	0.0010	0.0010	0.00077	0.00085	0.0011	<0.0025	0.00082	0.00082	0.0011	0.00072	0.00099	0.00079	0.00087	0.00080	0.0014
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	2.1	2.0	1.9	1.8	1.7	1.7	1.8	1.7	1.9	2.0	2.1	2.2	2.2	2.4	2.6	2.8	3.1	3.6	3.2	3.3	3.8	3.4	4.2	5.2
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.9	1.9	1.7	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.3	1.2	1.1	1.2	1.3	1.2	1.4	1.4	1.4	1.2	1.1	1.3	1.4	1.5	1.6
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.5	1.9	2.0	1.8	1.9	1.7	1.9	1.9	1.8	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.6	2.4	2.8	2.5	2.5	2.7	2.7	3.2	4.0
Strontium (Sr)	0.021	0.032	0.028	0.029	0.026	0.024	0.028	0.028	0.029	0.030	0.032	0.033	0.033	0.033	0.036	0.039	0.039	0.039	0.046	0.044	0.044	0.041	0.048	0.055	0.065
Sulphur (S)	1.1	19	17	15	12	11	9.2	11	12	12	15	16	15	17	20	24	23	30	32	30	31	36	37	41	56
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0016	0.0011	0.0014	<0.0050	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.027	0.21	0.17	0.17	0.14	0.12	0.089	0.088	0.085	0.072	0.075	0.069	0.072	0.071	0.072	0.077	0.086	0.084	0.10	0.087	0.095	0.093	0.10	0.095	0.21

Table B.8. Camp Lake Station EB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Physical/Chemical (mg/L)			Duplicate																Duplicate							
pH (pH units)	6.37	6.49	6.35	6.52	7.00	6.74	6.67	6.81	6.44	6.52	6.42	6.46	6.37	6.29	6.22	6.25	6.17	6.83	6.55	6.74	6.53	--	6.37	6.26	6.41	6.53
Alkalinity ($CaCO_3$)	80	8.5	7.9	9.2	11	9.9	11	13	15	14	14	15	13	13	12	12	11	8.4	8.1	8.2	7.4	--	6.1	7.4	6.4	12
Bicarbonate (HCO_3)	97	10	9.7	11	13	12	13	16	18	17	17	19	15	16	15	15	14	10	9.9	10	9.1	--	7.5	9.0	7.8	14
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	75.3	115	108	103	100	93.7	89.2	87.1	85.3	90.3	91.5	95.1	108	110	117	125	117	130	141	140	135	--	153	155	166	178
Hardness ($CaCO_3$)	65	120	110	100	100	92	98	90	82	90	91	97	98	110	110	140	130	150	150	150	140	--	--	170	170	190
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	146	--	--	--
Turbidity (NTU)	0.47	13	13	11	6.9	4.4	--	3.1	2.7	3.9	4.0	3.4	4.0	9.3	8.1	7.1	8.9	11	12	12	--	16	18	19	--	20
Total Suspended Solids (TSS)	<1.0	7.7	7.6	8.9	3.8	3.0	2.5	1.9	2.2	1.2	2.1	<1.0	<1.0	4.0	1.7	<0.97	1.6	<1.0	<1.0	2.9	1.7	--	1.1	2.8	<0.98	<1.0
Dissolved Organic Carbon (C)	--	8.7	9.5	8.8	9.6	8.9	8.4	11	11	11	12	12	11	11	9.9	10	10	9.6	9	8.8	8.4	--	8.6	8.2	8	12
Total Organic Carbon (C)	--	9.7	13	8.5	10	7.0	11	10	12	14	10	17	12	11	11	12	9.2	9.7	9.5	9.3	9.6	--	8.2	10	8.3	12
Dissolved Sulphate (SO_4)	12	--	--	88	81	83	80	78	70	69	74	85	95	100	100	110	120	130	150	150	140	--	150	160	160	180
Total Metals (mg/L)																										
Aluminum (Al)	0.058	0.24	0.23	0.18	0.19	0.16	0.15	0.11	0.088	0.11	0.13	0.12	0.13	0.26	0.18	0.14	0.14	0.17	0.23	0.19	0.22	--	0.19	0.18	0.26	0.090
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.0011	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.0012	0.00036	0.00040	0.00038	0.00029	0.00032	0.00022	0.00033	0.00030	0.00039	0.00044	0.00031	0.00040	0.00037	0.00035	0.00035	0.00060	0.00044	0.00046	0.00043	0.00047	--	0.00045	0.00038	0.00049	0.00038
Barium (Ba)	0.016	0.011	0.011	0.011	<0.010	<0.010	0.011	0.010	<0.010	0.011	0.011	0.011	<0.010	0.013	0.012	0.012	0.012	0.013	0.014	0.014	0.013	--	0.012	0.014	0.014	0.014
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023	0.053	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00033	0.0013	0.0013	0.0012	0.0011	0.0011	0.00082	0.00070	0.00053	0.00048	0.00047	0.00044	0.00051	0.00056	0.00059	0.00059	0.00064	0.00064	0.00085	0.00081	0.00098	--	0.00085	0.00084	0.00085	0.00063
Calcium (Ca)	19	35	33	31	29	28	27	26	26	27	28	29	33	34	36	39	36	40	44	43	42	--	47	49	53	45
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0037	0.0034	0.0029	0.0022	0.0020	0.0014	0.00066	0.00035	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00030	<0.00030	0.00042	0.00046	0.00048	0.00052	0.00066	--	0.00049	0.00044	0.00050	0.00047
Copper (Cu)	0.015	0.050	0.047	0.043	0.043	0.041	0.026	0.025	0.021	0.021	0.019	0.019	0.025	0.025	0.031	0.031	0.032	0.031	0.041	0.042	0.047	--	0.043	0.041	0.044	0.016
Iron (Fe)	0.37	7.0	7.9	5.4	3.5	2.2	1.8	1.7	1.7	2.0	1.7	2.1	2.7	3.7	4.3	4.4	4.8	3.7	4.8	4.7	6.1	--	6.6	5.7	5.9	5.6
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00027	0.00025	0.00024	0.00026	0.00027	0.00034	0.00029	0.00044	--	0.00037	0.00033	0.00040	0.00053
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	6.5	7.0	6.2	6.2	6.4	5.8	5.5	5.4	5.2	5.6	5.5	5.7	6.3	6.2	6.6	7.0	6.5	7.2	7.9	7.8	7.5	--	8.3	8.1	8.6	8.2
Manganese (Mn)	0.036	0.35	0.36	0.27	0.17	0.16	0.11	0.087	0.053	0.041	0.023	0.024	0.023	0.030	0.035	0.030	0.034	0.041	0.037	0.037	0.047	--	0.044	0.043	0.044	0.082
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.0014	0.0031	0.0029	0.0030	0.0028	0.0028	0.0058	0.0020	0.0028	0.0013	0.0014	0.0016	0.0012	0.0017	0.0015	0.0014	0.0015	0.0018	0.0019	0.0020	0.0019	--	0.0021	0.0018	0.0021	0.0012
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Potassium (K)	3.1	2.6	2.6	2.6	2.5	2.3	2.4	2.3	2.3	2.5	2.5	2.6	2.9	3.0	3.0	3.5	3.1	3.5	3.6	3.6	3.6	--	4.1	3.8	4.2	4.0
Selenium (Se)	0.00034	0.00026	<0.00020	0.00025	<0.00020	0.00029	0.00029	<0.00020	<0.00020	<0.00020	0.00029	<0.00020	0.00024	0.00026	0.00023	<0.00020	0.00021	0.00021	0.00020	0.00022	0.00026	--	0.00027	<0.00020	0.00023	0.00024
Silicon (Si)	3.3	2.3	2.3	2.0	1.7	1.8	1.8	1.7	1.6	1.7	1.2	1.4	1.2	1.6	1.4	1.2	1.1	1.3	1.3	1.2	1.3	--	1.3	1.3	1.4	1.7
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	3.7	2.4	2.3	2.3	2.3	2.1	2.3	2.2	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.7	2.5	2.7	3.0	2.9	3.0	--	3.2	3.1	3.4	3.2
Strontium (Sr)	0.044	0.043	0.042	0.041	0.035	0.037	0.041	0.036	0.036	0.039	0.039	0.041	0.039	0.044	0.046	0.042	0.045	0.049	0.048	0.048	0.046	--	0.048	0.056	0.058	0.054
Sulphur (S)	4.1	35	37	30	26	27	26	24	23	24	21	26	30	31	35	37	37	29	44	44	46	--	47	49	54	44
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0027	0.0071	0.0065	0.0051	0.0036	0.0035	0.0053	0.0028	0.0032	0.0044	0.0043	0.0026	0.0039	0.012	0.0079	0.0045	0.0044	0.0041	0.0067	0.0082	0.0074	--	0.0072	0.0050	0.0065	0.0036
Uranium (U)	<0.00010	0.00011	0.00011	<0.00010	<0.00010	<0.00010	0.00028	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	0.00014	--	<0.00010	<0.00010	<0.00010	0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.093	0.42	0.39	0.38	0.32	0.32	0.23	0.20	0.16	0.14	0.13	0.12	0.13	0.14	0.16	0.16	0.18	0.19	0.25	0.24	0.29	--	0.25	0.25	0.28	0.15

Table B.8. Continued.Camp Lake Station EB-1 - Laboratory Data

Parameter/Sample Date	18-Feb-21	1-Jun-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	20-Sep-21	27-Sep-21	28-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																										
Aluminum (Al)	0.040	0.080	0.077	0.076	0.059	0.058	0.048	0.055	0.053	0.057	0.044	0.048	0.062	0.064	0.058	0.058	0.071	0.068	0.062	0.052	0.060	–	0.051	0.065	0.051	0.025
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	–	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.0011	0.00023	0.00021	0.00021	0.00037	0.00028	0.00023	0.00024	0.00028	0.00031	0.00030	0.00033	0.00035	0.00047	<0.0010	0.00036	0.00045	0.00025	0.00038	0.00033	0.00028	–	0.00034	0.00026	0.00025	0.00028
Barium (Ba)	0.015	0.010	<0.010	0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	0.010	<0.010	0.011	0.011	0.012	0.012	0.014	0.014	0.013	0.012	–	0.013	0.014	0.013	0.016
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	–	<0.020	<0.020	<0.020	<0.020
Table B.8.	0.00024	0.0012	0.0012	0.00091	0.00092	0.00088	0.00073	0.00062	0.00051	0.00046	0.00047	0.00037	0.00047	0.00044	0.00050	0.00047	0.00058	0.00062	0.00068	0.00057	0.00067	–	0.00060	0.00074	0.00064	0.00060
Calcium (Ca)	17	35	32	31	31	27	29	27	25	27	28	30	30	35	35	43	39	47	45	46	44	–	46	54	55	56
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	0.0035	0.0033	0.0023	0.0018	0.0017	0.00068	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	0.00036	0.00041	0.00035	0.00041	–	0.00035	0.00038	0.00042	0.00037
Copper (Cu)	0.013	0.032	0.030	0.027	0.026	0.028	0.022	0.021	0.019	0.018	0.017	0.016	0.021	0.019	0.024	0.025	0.026	0.026	0.030	0.028	0.027	–	0.026	0.031	0.025	0.011
Iron (Fe)	0.24	3.9	4.1	3.2	1.5	1.2	1.3	1.2	1.3	1.3	1.3	1.6	1.8	2.6	2.7	3.5	3.8	4.3	3.5	2.9	4.1	–	3.2	2.2	2.9	2.3
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	–	<0.00020	0.00020	<0.00020	0.00023
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	–	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	5.4	7.0	6.6	6.3	6.4	5.8	6.1	5.5	4.9	5.5	5.4	5.7	5.6	6.3	6.4	8.0	7.2	8.6	8.1	7.7	7.8	–	7.6	8.9	8.8	9.7
Manganese (Mn)	0.031	0.32	0.30	0.25	0.18	0.14	0.098	0.059	0.040	0.025	0.0070	0.0059	0.013	0.018	0.020	0.019	0.024	0.040	0.034	0.030	0.045	–	0.039	0.041	0.043	0.090
Molybdenum (Mo)	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	–	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.0013	0.0027	0.0028	0.0023	0.0022	0.0023	0.0022	0.0018	0.0015	0.0013	0.0014	0.0012	0.0011	0.0011	<0.0025	0.0012	0.0012	0.0017	0.0017	0.0018	0.0014	–	0.0015	0.0014	0.0018	0.0013
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	–	<0.10	<0.10	<0.10	<0.10
Potassium (K)	2.6	2.6	2.5	2.6	2.6	2.4	2.6	2.4	2.2	2.4	2.4	2.6	2.7	3.1	2.9	3.6	3.5	4.1	3.7	3.7	4.1	–	3.7	4.2	4.4	4.9
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	–	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	3.0	1.9	1.7	1.9	1.6	1.7	1.6	1.5	1.5	1.4	1.1	1.1	1.0	0.95	0.90	0.97	0.98	1.1	1.0	0.77	0.96	–	0.99	0.98	0.99	1.7
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	–	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	3.4	2.4	2.2	2.3	2.4	2.1	2.4	2.3	2.1	2.3	2.2	2.3	2.3	2.5	2.4	2.9	2.6	3.2	3.1	2.9	3.0	–	2.9	3.4	3.4	4.0
Strontium (Sr)	0.045	0.043	0.037	0.037	0.037	0.034	0.041	0.038	0.035	0.037	0.039	0.041	0.041	0.045	0.045	0.050	0.045	0.056	0.052	0.055	0.047	–	0.055	0.061	0.060	0.064
Sulphur (S)	3.9	34	34	32	26	29	27	25	23	24	24	26	27	29	32	37	39	40	54	39	42	–	44	51	53	54
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	–	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	–	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	–	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.074	0.40	0.37	0.32	0.27	0.28	0.20	0.18	0.15	0.13	0.12	0.11	0.12	0.11	0.13	0.13	0.16	0.18	0.21	0.19	0.19	–	0.20	0.23	0.23	0.15

Table B.9. Camp Lake Station EB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	18-Mar-22
Physical/Chemical (mg/L)		Duplicate						Duplicate					Duplicate				Duplicate			Duplicate							
pH (pH units)	6.18	6.19	6.47	6.50	6.95	6.70	6.62	6.63	6.76	6.61	6.52	6.41	6.38	6.34	6.32	6.35	6.35	6.15	6.25	6.24	6.17	6.79	6.72	6.55	6.39	6.28	6.65
Alkalinity ($CaCO_3$)	39	40	8.5	8.5	10	9.7	11	9.6	13	14	14	14	16	14	13	12	13	11	12	12	11	9.0	8.7	7.7	6.9	7.9	15
Bicarbonate (HCO_3)	48	49	10	10	12	12	13	12	16	17	17	17	20	17	16	15	16	14	14	15	14	11	11	9.4	8.4	9.6	18
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	41.0	41.3	123	110	109	104	94.7	93.1	93.8	87.0	92.9	93.8	98.6	96.2	113	113	108	117	126	115	133	137	143	147	156	158	184
Hardness ($CaCO_3$)	37	37	120	110	110	110	110	110	91	85	89	96	99	99	100	110	110	120	140	130	140	160	140	150	--	180	190
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	146	--	--
Turbidity (NTU)	0.4	0.39	13	13	6.2	6.0			3.6	3.0	3.8	4.9	4.8	3.6	3.6	10	9.5	8.0	6.7	7.5	10	13	11		15	17	20
Total Suspended Solids (TSS)	1.6	<1.0	9.9	8.1	3.9	2.7	3.0	1.9	1.6	3.0	1.0	3.4	2.6	1.5	5.5	4.7	5.1	2.3	<1.0	<0.97	3.0	1.1	<1.0	3.2	2.3	2.7	2.4
Dissolved Sulphate (SO_4)	7.2	7.2		98	90	95	91	88	80	72	77	80	87	89	97	100	100	110	120	120	130	140	150	150	150	160	180
Total Metals (mg/L)																											
Aluminum (Al)	0.054	0.058	0.29	0.25	0.24	0.25	0.16	0.17	0.13	0.11	0.12	0.20	0.15	0.13	0.12	0.48		0.20	0.16	0.14	0.22	0.22	0.19	0.27	0.17	0.21	0.088
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.0020
Arsenic (As)	0.00067	0.00056	0.00034	0.00053	0.00036	0.00043	<0.00020	0.00036	0.00025	0.00038	0.00037	0.00040	0.00037	0.00032	0.00032	0.00043	0.00058	0.00062	0.00044	0.00046	0.00054	0.00052	0.00040	0.00043	0.00040	0.00048	0.00036
Barium (Ba)	<0.010	<0.010	0.012	0.012	0.010	0.011	0.011	0.010	0.011	<0.010	0.011	0.012	<0.010	0.011	<0.010	0.013	0.012	0.013	0.012	0.012	0.014	0.014	0.014	0.014	0.013	0.015	0.019
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	0.031	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.040	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00021	0.00023	0.0015	0.0017	0.0012	0.0011	0.00087	0.00095	0.00070	0.00054	0.00048	0.00049	0.00043	0.00041	0.00045	0.00054	0.00057	0.00055	0.00061	0.00052	0.00083	0.00072	0.00074	0.00093	0.00080	0.00083	0.00062
Calcium (Ca)	11	11	37	33	32	31	29	28	28	26	28	29	30	29	35	35	33	36	39	36	42	43	44	46	49	50	53
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.0042	0.0042	0.0028	0.0026	0.0016	0.0018	0.00073	0.00032	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00031	0.00034	<0.00030	<0.00030	<0.00030	0.00096	0.00054	0.00044	0.00059	0.00049	0.00044	0.00040
Copper (Cu)	0.0099	0.010	0.052	0.054	0.041	0.037	0.027	0.029	0.025	0.021	0.020	0.019	0.019	0.016	0.019	0.023	0.026	0.025	0.031	0.027	0.031	0.031	0.036	0.036	0.037	0.036	0.015
Iron (Fe)	0.36	0.36	6.6	5.5	3.7	2.3	1.5	1.6	1.8	1.7	2.0	1.3	2.0	2.0	2.5	3.4	3.6	3.8	4.2	2.5	4.5	4.5	4.4	5.0	6.0	5.3	4.5
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00033	0.00031	0.00023	0.00025	0.00026	0.00031	0.00028	0.00028	0.00040	0.00037	0.00038	0.00038
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.3	3.3	7.4	6.5	6.8	6.3	5.7	5.8	5.8	5.2	5.5	5.5	5.8	5.6	6.4	6.3	6.0	6.4	6.9	6.3	7.0	7.4	7.9	7.7	8.3	8.1	10
Manganese (Mn)	0.019	0.019	0.37	0.30	0.21	0.19	0.12	0.14	0.098	0.055	0.044	0.025	0.027	0.024	0.021	0.029	0.032	0.033	0.028	0.023	0.058	0.044	0.035	0.042	0.041	0.041	0.10
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00057	0.0012	0.0037	0.0039	0.0031	0.0032	0.0045	0.0028	0.0023	0.0030	0.0018	0.0016	0.0017	0.0017	0.0014	0.0015	0.0020	0.0018	0.0017	0.0017	0.0027	0.0018	0.0021	0.0023	0.0061	0.0017	0.0012
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.6	1.6	2.8	2.7	2.7	2.6	2.5	2.5	2.6	2.3	2.6	2.5	2.7	2.6	3.1	3.1	2.9	3.0	3.5	3.1	3.5	3.5	3.7	3.8	4.1	3.9	4.8
Selenium (Se)	<0.00020	<0.00020	0.00028	0.00024	0.00035	0.00024	0.00023	0.00025	<0.00020	<0.00020	<0.00020	0.00027	<0.00020	<0.00020	<0.00020	0.00021	0.00024	<0.00020	0.00026	<0.00020	0.00025	0.00031	0.00021	0.00022	0.00023	<0.00020	0.00027
Silicon (Si)	2.2	2.2	2.4	2.0	1.9	2.1	1.8	1.7	1.9	1.6	1.7	1.5	1.5	1.5	1.3	1.7	1.6	1.4	1.2	0.96	1.4	1.5	1.2	1.3	1.2	1.3	2.1
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	2.0	2.4	2.4	2.4	2.3	2.3	2.1	2.3	2.2	2.2	2.2	2.3	2.2	2.5	2.5	2.4	2.5	2.7	2.4	2.9	2.9	3.0	3.2	3.2	3.2	3.9
Strontium (Sr)	0.024	0.024	0.045	0.043	0.037	0.040	0.040	0.039	0.038	0.036	0.040	0.042	0.038	0.041	0.040	0.045	0.043	0.046	0.043	0.045	0.053	0.053	0.049	0.050	0.049	0.057	0.065
Sulphur (S)	2.5	2.5	37	33	29	31	27	27	26	23	26	25	26	27	32	32	34	36	37	30	42	45	45	48	48	50	50
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0011	<0.0010	0.0090	0.0058	0.0035	0.0077	0.0042	0.0046	0.0040	0.0033	0.0041	0.0072	0.0055	0.0037	0.0028	0.013	0.015	0.0095	0.0047	0.0047	0.0079	0.0078	0.0082	0.013	0.0031	0.0067	0.0034
Uranium (U)	<0.00010	<0.00010	0.00011	0.00011	0.00013	<0.00010	<0.00010	0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	0.00025	<0.00010	0.00011	<0.00010	<0.00010	<0.00010
Vanadium (V)	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.084	0.078	0.46	0.51	0.37	0.35	0.24	0.26	0.21	0.15	0.15	0.14	0.13	0.12	0.12	0.13	0.15	0.14	0.17	0.15	0.23	0.20	0.23	0.25	0.24	0.24	0.17

Table B.9. Continued. Camp Lake Station EB-2 - Laboratory Data

Parameter/Sample Date	18-Feb-21	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	18-Mar-22
Dissolved Metals (mg/L)																											
Aluminum (Al)	0.042	0.042	0.093	0.059	0.060	0.058	0.050	0.097	0.058	0.057	0.064	0.044	0.044	0.049	0.060	0.073	0.070	0.056	0.058	0.061	0.082	0.074	0.052	0.068	0.051	0.052	0.040
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00052	0.00051	0.00027	0.00020	0.00028	0.00028	<0.00020	0.00028	0.00033	0.00024	0.00033	0.00039	0.00032	0.00033	0.00038	0.00037	0.00041	<0.0010	0.00032	0.00039	0.00039	0.00024	0.00035	0.00033	0.00032	0.00020	0.00040
Barium (Ba)	<0.010	<0.010	0.011	0.010	<0.010	<0.010	0.011	0.011	<0.010	<0.010	0.010	0.010	0.011	0.010	<0.010	0.011	0.012	0.011	0.012	0.012	0.013	0.015	0.013	0.013	0.013	0.014	0.019
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00021	0.00020	0.0013	0.00092	0.0010	0.00097	0.00082	0.00075	0.00062	0.00053	0.00045	0.00041	0.00037	0.00042	0.00042	0.00044	0.00045	0.00051	0.00049	0.00050	0.00065	0.00062	0.00057	0.00062	0.00059	0.00074	0.00050
Calcium (Ca)	10	10	37	33	32	31	32	32	27	26	27	29	30	30	32	33	34	36	44	40	45	51	45	47	46	56	55
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.0042	0.0027	0.0022	0.0022	0.0011	0.00092	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	0.00076	0.00039	<0.00030	0.00037	0.00035	0.00035	0.00041
Copper (Cu)	0.0093	0.0092	0.032	0.023	0.022	0.023	0.021	0.021	0.020	0.019	0.018	0.016	0.016	0.016	0.016	0.018	0.018	0.021	0.025	0.025	0.023	0.025	0.024	0.022	0.021	0.028	0.013
Iron (Fe)	0.25	0.25	3.7	2.4	1.1	0.97	1.1	1.0	1.1	1.2	1.3	1.3	1.4	1.6	1.7	2.3	1.6	2.1	3.3	3.5	3.3	3.4	2.6	3.2	2.7	1.1	2.4
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.022	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.9	2.9	7.3	6.6	6.6	6.5	6.5	7.0	5.6	4.9	5.2	5.5	5.8	5.7	5.9	5.9	6.1	6.4	8.0	7.1	7.8	9.0	7.5	7.9	7.5	8.9	9.8
Manganese (Mn)	0.016	0.016	0.36	0.27	0.21	0.19	0.13	0.13	0.062	0.041	0.030	0.0073	0.0058	0.0070	0.0096	0.014	0.011	0.022	0.019	0.019	0.051	0.040	0.027	0.036	0.037	0.040	0.099
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00073	0.00075	0.0033	0.0027	0.0025	0.0027	0.0023	0.0026	0.0017	0.0017	0.0012	0.0016	0.0015	0.0015	0.0012	0.0012	0.0011	<0.0025	0.0011	0.0014	0.0020	0.0019	0.0019	0.0016	0.0017	0.0016	0.0013
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.4	2.7	2.8	2.7	2.7	2.7	2.8	2.4	2.3	2.4	2.5	2.6	2.6	2.9	2.8	2.9	2.9	3.5	3.3	3.7	4.2	3.7	4.2	3.7	4.3	5.0
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.0	1.9	1.9	1.7	1.6	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.0	0.96	0.83	0.84	0.99	1.0	1.1	1.0	0.76	0.86	0.94	0.93	1.9
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.8	1.8	2.5	2.4	2.4	2.3	2.5	2.4	2.2	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.5	2.4	3.0	2.7	3.0	3.4	2.9	3.0	2.9	3.4	4.1
Strontium (Sr)	0.025	0.025	0.045	0.039	0.038	0.037	0.044	0.044	0.038	0.035	0.038	0.040	0.041	0.041	0.042	0.043	0.045	0.046	0.050	0.045	0.052	0.060	0.054	0.050	0.055	0.063	0.066
Sulphur (S)	2.5	2.4	37	33	30	32	30	30	26	22	26	27	26	27	28	31	27	32	38	40	41	42	39	45	44	50	51
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	0.0013	<0.0050	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.066	0.067	0.44	0.33	0.30	0.30	0.22	0.23	0.18	0.15	0.14	0.11	0.11	0.11	0.11	0.12	0.10	0.13	0.13	0.14	0.19	0.19	0.18	0.18	0.19	0.22	0.17

Table B.10. Sherlett Creek Station SC-1 - Laboratory Data

Station	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1
Parameter/Sample Date	**11-Jan-21**	**18-Feb-21**	**1-Jun-21**	**8-Jun-21**	**16-Jun-21**	**21-Jun-21**	**28-Jun-21**	**5-Jul-21**	**12-Jul-21**	**18-Jul-21**	**19-Jul-21**	**26-Jul-21**	**1-Aug-21**	**9-Aug-21**	**16-Aug-21**
Physical/Chemical (mg/L)															
pH (pH units)	6.28	6.15	6.86	6.85	7.34	6.98	6.99	6.97	6.74	6.61	6.71	6.59	6.59	6.54	6.52
Conductivity (µS/cm @ 25°C)	--	--	--	--	--	--	--	--	--	66	--	62	--	--	--
Alkalinity ($CaCO_3$)	33	30	24	24	22	23	24	24	26	24	24	24	25	27	26
Bicarbonate (HCO_3)	40	37	29	30	27	28	29	29	31	29	29	30	31	33	31
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	32.9	31.0	29.7	29.6	30.5	27.9	27.0	27.4	28.5	29.8	28.9	28.9	29.4	30.8	29.7
Hardness ($CaCO_3$)	29	30	31	29	30	28	29	29	27	30	27	29	29	28	34
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity (NTU)	1.5	0.59	1.4	2.2	2.1	1.3	--	1.4	1.2	1.3	1.6	1.5	1.7	2.1	2.3
Total Suspended Solids (TSS)	<1.0	1.2	2.5	3.8	1.9	<1.0	2	1.1	2.5	2.4	2.3	1.4	<1.0	<1.0	<1.0
Dissolved Organic Carbon (C)	--	--	12	12	14	13	12	3.1	18	--	14	14	16	15	14
Total Organic Carbon (C)	--	--	13	13	14	13	14	13	17	--	16	12	19	14	13
Dissolved Sulphate (SO_4)	--	<1.0	--	1.4	2.5	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	2.2	1.7
Total Metals (mg/L)															
Aluminum (Al)	0.058	0.063	0.059	0.10	0.088	0.075	0.084	0.054	0.047	0.069	0.059	0.049	0.074	0.075	0.077
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.0007	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00069	0.00042	0.00039	0.00055	0.00047	0.00051	0.00029	0.00042	0.00039	0.00042	0.00040	0.00049	0.00045	0.00044	0.00032
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.029	<0.020	<0.020
Cadmium (Cd)	0.00014	0.00016	0.00023	0.00034	0.00030	0.00025	0.00013	0.00013	0.00015	0.00038	0.00017	0.00025	0.00015	0.00025	0.00021
Calcium (Ca)	8.6	8.1	7.8	7.8	7.9	7.2	7.1	7.2	7.5	7.8	7.5	7.5	7.6	8.0	7.8
Chromium (Cr)	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0049	0.0055	0.011	0.017	0.014	0.012	0.0072	0.0056	0.0069	0.019	0.0087	0.011	0.0065	0.011	0.0082
Iron (Fe)	0.27	0.30	0.31	0.32	0.32	0.26	0.23	0.27	0.25	0.26	0.24	0.27	0.30	0.32	0.38
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.8	2.6	2.5	2.4	2.6	2.4	2.3	2.3	2.4	2.5	2.5	2.5	2.5	2.6	2.5
Manganese (Mn)	0.017	0.036	0.023	0.029	0.025	0.018	0.016	0.030	0.027	0.038	0.025	0.030	0.036	0.036	0.039
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.00050	<0.00050	0.00072	0.00068	0.00065	0.00054	<0.00050	0.00062	0.00060	0.0010	0.00055	0.00072	0.0018	0.00060	0.00091
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.2	1.2	1.1	1.2	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.0	1.1	1.2	1.1
Selenium (Se)	<0.00020	0.00023	0.00023	0.00026	<0.00020	0.00027	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.2	2.0	2.2	2.0	1.7	1.8	1.8	1.8	1.7	1.8	1.8	1.7	1.7	1.5	1.8
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.6	1.5	1.5	1.5	1.4	1.3	1.4	1.6	1.4	1.9	1.9	1.5	1.6	1.8	2.3
Strontium (Sr)	0.022	<0.020	<0.020	0.02	<0.020	<0.020	0.020	<0.020	<0.020	0.021	0.021	0.021	0.028	0.020	0.022
Sulphur (S)	1.2	1.0	1.3	1.3	1.2	1.2	1.1	1.0	1.2	1.5	1.2	1.2	1.1	1.2	1.2
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0015	0.0016	0.0040	0.0033	0.0030	0.0026	0.0029	0.0016	0.0018	0.0028	0.0018	0.0038	0.0028	0.0032
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0004	<0.00010	<0.00010
Vanadium (V)	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.038	0.043	0.062	0.10	0.089	0.071	0.040	0.037	0.045	0.13	0.060	0.072	0.051	0.076	0.063

Table B.10. Continued. Sherlett Creek Station SC-1 - Laboratory Data

Station	SC-1-1A	SC-1-2A	SC-1	SC-1	SC-1-1A	SC-1-2A	SC-1-3A	SC-1-4A	SC-1-5A	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1
Parameter/Sample Date	**22-Aug-21**	**22-Aug-21**	**23-Aug-21**	**30-Aug-21**	**1-Sep-21**	**1-Sep-21**	**1-Sep-21**	**1-Sep-21**	**1-Sep-21**	**5-Sep-21**	**13-Sep-21**	**20-Sep-21**	**27-Sep-21**	**28-Sep-21**	**4-Oct-21**	**13-Oct-21**	**21-Oct-21**	**1-Feb-22**	**1-Feb-22**	**18-Mar-22**
Physical/Chemical (mg/L)																			**Duplicate**	
pH (pH units)	--	--	6.42	6.50	--	--	--	--	--	6.41	7.05	6.97	6.88	--	6.73	6.61	6.61	7.12	7.09	6.97
Conductivity (µS/cm @ 25°C)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Alkalinity ($CaCO_3$)	--	--	30	25	--	--	--	--	--	26	28	30	26	--	27	28	29	29	28	28
Bicarbonate (HCO_3)	--	--	37	31	--	--	--	--	--	32	34	36	31	--	33	34	35	35	35	34
Carbonate (CO_3)	--	--	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	--	--	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	30.3	28.7	30.1	30.2	30.5	29.6	30.6	29.8	30.4	31.2	33.1	36.1	34.5	--	40.1	35.3	37.8	36.6	36.5	33.2
Hardness ($CaCO_3$)	--	--	31	35	32	33	33	32	33	33	39	37	35	--	--	40	39	34	33	33
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36.3	--	--	--	--	--
Turbidity (NTU)	--	--	2.5	2.9	--	--	--	--	--	3.0	5.1	6.4	--	4.0	5.8	6.2		0.79	0.77	1.4
Total Suspended Solids (TSS)	--	--	1	<1.0	--	--	--	--	--	1.4	1.9	3.8	2.2	--	3.2	3.8	2.2	1.1	<0.99	1.7
Dissolved Organic Carbon (C)	--	--	11	14	--	--	--	--	--	12	13	13	12	--	13	12	12	13	13	13
Total Organic Carbon (C)	--	--	13	14	--	--	--	--	--	13	13	13	13	--	13	13	12	12	13	14
Dissolved Sulphate (SO_4)	--	--	2.6	2.9	--	--	--	--	--	6.3	6.8	11	11	--	11	8.7	11	3.4	3.2	<1.0
Total Metals (mg/L)																				
Aluminum (Al)	0.098	0.074	0.084	0.097	0.081	0.071	0.076	0.074	0.082	0.089	0.13	0.24	0.16	--	0.15	0.27	0.19	0.037	0.038	0.092
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	0.0027	<0.00060	<0.00060	<0.00060	0.0027	<0.00060
Arsenic (As)	0.00055	0.00053	0.00078	0.00045	0.00056	0.00057	0.00062	0.00060	0.00058	0.00064	0.00053	0.00064	0.00050	--	0.00050	0.00056	0.00050	0.00050	0.00038	0.00049
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	--	<0.010	0.010	0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	0.028	<0.020	0.029	<0.020	0.038	0.040	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00019	0.00019	0.00021	0.00020	0.00019	0.00019	0.00020	0.00018	0.00019	0.00058	0.00039	0.00047	0.00075	--	0.00047	0.00036	0.00048	0.00010	0.00011	0.000099
Calcium (Ca)	7.9	7.5	7.9	7.9	7.9	7.7	7.9	7.7	7.9	8.3	8.7	9.4	9.1	--	11	9.3	10	9.4	9.5	8.5
Chromium (Cr)	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00037	0.00033	--	0.00042	0.00031	0.00034	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0083	0.0088	0.0080	0.0073	0.0071	0.0068	0.0071	0.0065	0.0071	0.021	0.014	0.018	0.022	--	0.015	0.013	0.016	0.0039	0.0040	0.0040
Iron (Fe)	0.41	0.39	0.42	0.38	0.39	0.37	0.37	0.36	0.38	0.48	0.60	0.71	0.60	--	0.96	0.60	0.55	0.19	0.19	0.28
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	0.00029	--	0.00024	0.00025	0.00023	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.6	2.4	2.5	2.6	2.6	2.5	2.6	2.5	2.6	2.5	2.8	3.0	2.8	--	3.3	2.9	3.1	3.2	3.1	2.9
Manganese (Mn)	0.038	0.032	0.036	0.039	0.045	0.042	0.045	0.041	0.041	0.060	0.058	0.14	0.092	--	0.18	0.11	0.087	0.013	0.013	0.025
Molybdenum (Mo)	<0.00020	<0.00020	0.00029	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	0.00039
Nickel (Ni)	0.00064	0.0016	0.00065	0.00052	<0.00050	<0.00050	0.00057	0.00067	0.00054	0.00084	0.00088	0.00086	0.00086	--	0.00086	0.00062	0.00099	<0.00050	0.00058	0.00059
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.4	--	1.9	1.4	1.6	1.4	1.5	1.3
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.9	1.7	1.8	1.6	1.6	1.5	1.6	1.5	1.6	1.8	1.7	1.8	1.7	--	1.6	1.4	1.5	1.1	1.1	1.3
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.0	2.0	1.8	2.6	2.7	2.7	2.6	2.5	2.6	2.1	4.5	3.8	3.8	--	6.0	5.4	5.1	2.1	2.1	1.8
Strontium (Sr)	0.022	0.021	0.022	0.020	0.021	0.021	0.021	0.021	0.021	0.023	0.024	0.024	0.023	--	0.026	0.025	0.026	0.024	0.024	0.023
Sulphur (S)	1.3	1.4	1.4	1.3	1.5	1.5	1.5	1.4	1.5	2.4	2.6	3.5	3.8	--	3.7	3.0	3.6	1.4	1.4	1.3
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	0.0026	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0084	0.0041	0.0057	0.0050	0.0033	0.0042	0.0038	0.0031	0.0044	0.0041	0.0065	0.012	0.0078	--	0.0093	0.0075	0.019	0.0027	0.0021	0.0051
Uranium (U)	0.00025	<0.00010	0.00028	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.077	0.079	0.080	0.081	0.080	0.078	0.080	0.078	0.084	0.25	0.20	0.29	0.35	--	0.27	0.23	0.31	0.033	0.032	0.028

Table B.10. Continued. Sherlett Creek Station SC-1 - Laboratory Data

Station	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1
Parameter/Sample Date	**11-Jan-21**	**18-Feb-21**	**1-Jun-21**	**8-Jun-21**	**16-Jun-21**	**21-Jun-21**	**28-Jun-21**	**5-Jul-21**	**12-Jul-21**	**18-Jul-21**	**19-Jul-21**	**26-Jul-21**	**1-Aug-21**	**9-Aug-21**	**16-Aug-21**
Dissolved Metals (mg/L)															
Aluminum (Al)	0.046	0.041	0.038	0.037	0.038	0.037	0.040	0.028	0.029	0.035	0.031	0.021	0.021	0.029	0.027
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00057	0.00044	0.00034	0.00038	0.0004	0.00027	0.00033	0.00038	0.00037	0.00045	0.00038	0.00043	0.00037	0.00045	0.00043
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00011	0.000091	0.00018	0.00023	0.00028	0.00019	0.00014	0.0001	0.00014	0.00035	0.00015	0.00021	0.00011	0.00021	0.00016
Calcium (Ca)	7.7	8.0	8.0	7.5	7.7	7.1	7.5	7.6	7.0	7.7	6.9	7.6	7.6	7.2	8.9
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0053	0.0040	0.0096	0.011	0.017	0.0098	0.0066	0.0070	0.0064	0.016	0.0074	0.0093	0.0065	0.0090	0.0069
Iron (Fe)	0.17	0.20	0.22	0.18	0.17	0.16	0.16	0.18	0.16	0.16	0.15	0.18	0.20	0.19	0.24
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.4	2.4	2.6	2.4	2.6	2.4	2.5	2.5	2.2	2.5	2.3	2.4	2.5	2.4	2.8
Manganese (Mn)	0.013	0.016	0.0067	0.011	0.011	0.0064	0.0045	0.0098	0.015	0.024	0.012	0.014	0.021	0.029	0.018
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00064	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00060	<0.00050	<0.00050	0.00056	0.00062	<0.00050	0.00053
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.0	1.1	0.99	1.1	1.1	1.1	1.3
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.7	1.9	2.1	1.8	1.6	1.7	1.6	1.6	1.5	1.6	1.4	1.4	1.3	1.3	1.4
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.5	1.5	1.5	1.5	1.7	1.4	1.5	1.6	1.4	2.0	1.8	1.5	1.6	1.6	2.6
Strontium (Sr)	0.021	0.021	0.020	<0.020	<0.020	<0.020	0.021	0.020	0.020	0.021	<0.020	0.021	0.022	0.021	0.024
Sulphur (S)	1.2	1.1	1.4	1.3	1.6	1.2	1.1	1.0	1.2	1.5	1.2	1.3	1.1	1.2	1.1
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.040	0.027	0.065	0.069	0.086	0.060	0.035	0.033	0.047	0.11	0.047	0.063	0.044	0.065	0.057

Table B.10. Continued. Sherlett Creek Station SC-1 - Laboratory Data

Station	SC-1-1A	SC-1-2A	SC-1	SC-1	SC-1-1A	SC-1-2A	SC-1-3A	SC-1-4A	SC-1-5A	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1	SC-1
Parameter/Sample Date	**22-Aug-21**	**22-Aug-21**	**23-Aug-21**	**30-Aug-21**	**1-Sep-21**	**1-Sep-21**	**1-Sep-21**	**1-Sep-21**	**1-Sep-21**	**5-Sep-21**	**13-Sep-21**	**20-Sep-21**	**27-Sep-21**	**28-Sep-21**	**4-Oct-21**	**13-Oct-21**	**21-Oct-21**	**1-Feb-22**	**1-Feb-22**	**18-Mar-22**
Dissolved Metals (mg/L)																				
Aluminum (Al)	--	--	0.025	0.033	0.033	0.032	0.032	0.031	0.032	0.036	0.049	0.062	0.046	--	0.038	0.059	0.056	0.022	0.017	0.018
Antimony (Sb)	--	--	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	--	--	<0.0010	0.00043	0.00056	0.00050	0.00059	0.00059	0.00047	0.00047	0.00037	0.00051	0.00041	--	0.00044	0.00048	0.00033	0.00045	0.00037	0.00044
Barium (Ba)	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	--	--	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	--	--	<0.020	<0.020	<0.020	0.023	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	--	--	0.00019	0.00014	0.00015	0.00012	0.00014	0.00014	0.00015	0.00049	0.00036	0.00045	0.00058	--	0.00036	0.00036	0.00048	0.000090	0.000073	0.000035
Calcium (Ca)	--	--	8.1	9.1	8.5	8.5	8.5	8.5	8.5	8.7	10	10	9.2	--	9.8	11	10	9.1	8.7	8.5
Chromium (Cr)	--	--	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	--	--	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	--	--	0.0077	0.0064	0.0064	0.0066	0.0065	0.0063	0.0064	0.019	0.013	0.013	0.018	--	0.011	0.0095	0.012	0.0033	0.0032	0.0027
Iron (Fe)	--	--	0.22	0.21	0.22	0.21	0.21	0.21	0.21	0.27	0.37	0.32	0.29	--	0.31	0.27	0.24	0.12	0.12	0.14
Lead (Pb)	--	--	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	--	--	2.7	3	2.7	2.8	2.8	2.7	2.7	2.8	3.3	3	2.9	--	2.9	3.2	3.2	2.8	2.7	2.7
Manganese (Mn)	--	--	0.031	0.016	0.0078	0.0052	0.0055	0.006	0.0044	0.039	0.043	0.088	0.034	--	0.13	0.1	0.072	0.0072	0.0071	0.0080
Molybdenum (Mo)	--	--	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	--	--	<0.0025	<0.00050	0.00052	<0.00050	0.00051	0.00055	<0.00050	0.00058	0.00064	0.00072	0.00063	--	0.00063	<0.00050	0.00054	<0.00050	0.00052	<0.00050
Phosphorus (P)	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	--	--	1.1	1.3	1.4	1.3	1.4	1.3	1.3	1.3	1.5	1.5	1.6	--	1.5	1.6	1.7	1.4	1.4	1.3
Selenium (Se)	--	--	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	--	--	1.3	1.4	1.3	1.4	1.4	1.5	1.4	1.5	1.4	1.1	1.2	--	1.2	0.96	1.1	1.0	0.99	1.1
Silver (Ag)	--	--	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	--	--	1.9	2.9	2.8	2.9	2.8	2.7	2.8	2.2	5.2	3.8	3.7	--	5.6	5.8	5.1	2.1	2.0	1.8
Strontium (Sr)	--	--	0.022	0.023	0.023	0.023	0.023	0.023	0.023	0.022	0.026	0.027	0.023	--	0.027	0.028	0.026	0.022	0.022	0.023
Sulphur (S)	--	--	1.2	1.5	1.5	1.5	1.5	1.4	1.4	2.3	2.3	3.1	3.4	--	3.5	2.8	3.6	1.4	1.3	1.2
Thallium (Tl)	--	--	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	--	--	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	--	--	<0.0050	<0.0010	<0.0010	<0.0010	0.0012	0.0012	<0.0010	<0.0010	0.0014	0.0022	0.0012	--	<0.0010	0.0018	0.0018	<0.0010	<0.0010	<0.0010
Uranium (U)	--	--	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	--	--	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	--	--	0.081	0.071	0.072	0.070	0.074	0.071	0.076	0.23	0.20	0.27	0.32	--	0.25	0.22	0.29	0.039	0.035	0.024

Table B.11. Sherlett Creek Stations SC-2 and SC-3 - Laboratory Data

Station	SC-2	SC-2	SC-2	SC-2-1A	SC-2-2A	SC-2-3A	SC-2-3B	SC-2-4A	SC-2-5A	SC-2	SC-2	SC-2	SC-3	SC-3	SC-3	SC-3-1A	SC-3-2A	SC-3-3A	SC-3-4A	SC-3	SC-3	SC-3	SC-3
Parameter/Sample Date	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**1-Feb-22**
Physical/Chemical (mg/L)																							
pH (pH units)	6.58	6.55	6.42	--	--	--	--	--	--	6.42	6.98	6.70	6.54	6.56	6.45	--	--	--	--	6.41	7.00	6.67	7.14
Conductivity (µS/cm @ 25°C)	67	64	--	--	--	--	--	--	--	--	--	--	71	59	--	--	--	--	--	--	--	--	--
Alkalinity ($CaCO_3$)	24	24	28	--	--	--	--	--	--	26	26	26	23	23	28	--	--	--	--	25	26	25	30
Bicarbonate (HCO_3)	29	30	34	--	--	--	--	--	--	32	31	32	29	28	34	--	--	--	--	30	31	30	36
Carbonate (CO_3)	<1.0	<1.0	<1.0	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	31.0	29.7	33.2	30.0	29.1	29.3	28.9	27.8	29.4	29.7	37.2	39.5	33.2	30.0	32.0	29.4	29.2	63.6	28.4	29.9	30.6	35.4	39.5
Hardness ($CaCO_3$)	31	29	30	--	--	--	--	--	--	32	36	--	35	28	32	--	--	--	--	31	30	--	36
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	35.5	--	--	--	--	--	--	--	--	--	35.1	--
Turbidity (NTU)	1.2	1.8	2.9	--	--	--	--	--	--	2.9	5.1	6.2	1.3	2.3	2.5	--	--	--	--	3.4	4.1	5.1	9.0
Total Suspended Solids (TSS)	2.5	3.9	9.1	--	--	--	--	--	--	1.7	2.9	2.6	2.9	3.5	<1.0	--	--	--	--	3.9	2.1	2.3	22
Dissolved Organic Carbon (C)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon (C)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Sulphate (SO_4)	5.7	3.2	7.2	--	--	--	--	--	--	4.7	12	11	7.3	<1.0	8.4	--	--	--	--	4.5	5.0	11	4.5
Total Metals (mg/L)																							
Aluminum (Al)	0.098	0.066	0.12	0.10	0.086	0.095	0.13	0.091	0.097	0.080	0.17	0.15	0.082	0.057	0.12	0.10	0.13	0.11	0.091	0.099	0.14	0.13	0.39
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00050	0.00056	0.00042	0.00053	0.00052	0.00050	0.00055	0.00047	0.00044	0.00055	0.00066	0.00056	0.00041	0.00031	0.00047	0.00057	0.00056	0.00063	0.00044	0.00059	0.00065	0.00043	0.00063
Barium (Ba)	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	<0.010	<0.010	0.014
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.0012	0.00063	0.0011	0.00037	0.00024	0.00023	0.00023	0.00014	0.000087	0.00044	0.00060	0.00046	0.0017	0.00070	0.0014	0.00053	0.00046	0.000082	0.000087	0.00058	0.00035	0.00079	0.00017
Calcium (Ca)	8.0	7.8	8.7	7.9	7.6	7.6	7.5	7.2	7.7	7.8	9.8	10	8.7	7.8	8.4	7.7	7.6	21	7.4	7.8	7.8	9.3	10
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	0.0031	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	0.0012	0.001	<0.0010	<0.0010	0.0012	0.0011
Cobalt (Co)	0.00071	<0.00030	0.0007	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00032	0.00044	0.00072	<0.00030	0.00049	0.00038	0.00049	<0.00030	<0.00030	<0.00030	<0.00030	0.00042	<0.00030
Copper (Cu)	0.048	0.029	0.043	0.012	0.011	0.0087	0.0071	0.0048	0.0046	0.015	0.022	0.016	0.071	0.030	0.051	0.021	0.017	0.013	0.0037	0.019	0.012	0.022	0.0089
Iron (Fe)	0.33	0.25	0.48	0.45	0.44	0.45	0.48	0.41	0.46	0.42	0.67	0.95	0.27	0.26	0.33	0.43	0.56	0.53	0.42	0.54	0.54	0.72	0.77
Lead (Pb)	<0.00020	<0.00020	<0.00020	0.00055	<0.00020	<0.00020	0.00043	0.00030	<0.00020	<0.00020	0.00037	0.00029	<0.00020	<0.00020	<0.00020	0.00036	0.00069	0.00024	<0.00020	<0.00020	<0.00020	0.00022	0.00061
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.6	2.5	2.8	2.5	2.5	2.5	2.5	2.4	2.5	2.5	3.1	3.3	2.8	2.5	2.7	2.5	2.5	2.5	2.4	2.5	2.7	3.0	3.4
Manganese (Mn)	0.089	0.036	0.13	0.047	0.048	0.054	0.053	0.044	0.071	0.055	0.090	0.14	0.068	0.047	0.081	0.057	0.098	0.081	0.041	0.089	0.050	0.10	0.049
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	0.00038	<0.00020	<0.00020	<0.00020	0.00037	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.0010	0.0008	0.00082	0.00068	0.0016	0.0011	0.00058	0.00060	0.0013	0.00070	0.0010	0.00070	0.0013	<0.00050	0.0022	0.00082	0.0015	0.0020	<0.00050	0.00061	0.00070	0.00088	0.0012
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.19	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	1.0	1.3	1.2	1.1	1.2	1.2	1.1	1.1	1.1	1.3	1.8	1.2	1.0	1.1	1.1	1.2	1.4	1.2	1.1	1.2	1.5	1.5
Selenium (Se)	<0.00020	0.00025	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.8	1.6	1.7	1.9	1.8	1.8	1.9	1.8	1.7	1.6	1.7	1.6	1.8	1.5	1.7	1.9	2.0	1.8	1.8	1.8	1.6	1.6	1.6
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.4	1.4	1.6	1.7	1.8	1.9	2	2.1	2.1	2.1	2.8	4.9	1.5	1.4	1.5	1.5	1.5	2.7	1.7	1.7	2.1	2.5	5.9
Strontium (Sr)	0.021	0.022	0.022	0.021	0.021	0.021	0.021	0.020	0.021	0.022	0.025	0.025	0.023	0.022	0.023	0.021	0.021	0.027	0.021	0.022	0.020	0.023	0.026
Sulphur (S)	2.0	1.5	2.4	1.4	1.4	1.2	1.3	1.1	1.1	1.8	3.7	3.7	2.7	1.6	2.5	1.7	1.4	1.2	1.0	1.8	1.8	3.0	1.9
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0039	0.0022	0.0040	0.0060	0.0036	0.0072	0.0068	0.0050	0.0074	0.0036	0.0079	0.0077	0.0024	0.0018	0.0023	0.0074	0.0073	0.0050	0.0064	0.0048	0.0067	0.0090	0.019
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	0.00016
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
Zinc (Zn)	0.32	0.19	0.31	0.12	0.092	0.071	0.054	0.031	0.029	0.17	0.33	0.29	0.51	0.19	0.40	0.19	0.14	0.015	0.019	0.19	0.15	0.36	0.077

Table B.11. Continued. Sherlett Creek Stations SC-2 and SC-3 - Laboratory Data

Station	SC-2	SC-2	SC-2	SC-2-1A	SC-2-2A	SC-2-3A	SC-2-3B	SC-2-4A	SC-2-5A	SC-2	SC-2	SC-2	SC-3	SC-3	SC-3	SC-3-1A	SC-3-2A	SC-3-3A	SC-3-4A	SC-3	SC-3	SC-3	SC-3
Parameter/Sample Date	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**1-Feb-22**
Dissolved Metals (mg/L)																							
Aluminum (Al)	0.044	0.026	0.034	--	--	--	--	--	--	0.033	0.039	0.056	0.047	0.018	0.038	--	--	--	--	0.031	0.034	0.031	0.024
Antimony (Sb)	<0.00060	<0.00060	<0.00060	--	--	--	--	--	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	--	--	--	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00051	0.00048	0.00044	--	--	--	--	--	--	0.00050	0.00044	0.00039	0.00043	0.00046	0.00048	--	--	--	--	0.00045	0.00045	0.00036	0.00032
Barium (Ba)	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	--	--	--	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	--	--	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.001	0.00061	0.00098	--	--	--	--	--	--	0.00030	0.00051	0.00042	0.0014	0.000045	0.0014	--	--	--	--	0.00037	0.00022	0.00076	<0.000020
Calcium (Ca)	8.0	7.6	7.9	--	--	--	--	--	--	8.2	9.7	9.6	9.1	7.3	8.5	--	--	--	--	8.1	8.0	9.4	9.6
Chromium (Cr)	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	--	--	--	--	--	--	<0.00030	<0.00030	<0.00030	0.00051	<0.00030	0.00042	--	--	--	--	<0.00030	<0.00030	0.00035	<0.00030
Copper (Cu)	0.042	0.025	0.036	--	--	--	--	--	--	0.010	0.018	0.012	0.060	0.0030	0.048	--	--	--	--	0.014	0.0086	0.018	0.0017
Iron (Fe)	0.16	0.16	0.19	--	--	--	--	--	--	0.24	0.30	0.33	0.17	0.15	0.19	--	--	--	--	0.25	0.24	0.27	0.12
Lead (Pb)	<0.00020	<0.00020	<0.00020	--	--	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	--	--	--	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	--	--	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.6	2.4	2.5	--	--	--	--	--	--	2.7	2.9	2.8	3.0	2.4	2.7	--	--	--	--	2.6	2.5	2.8	3.0
Manganese (Mn)	0.036	0.018	0.048	--	--	--	--	--	--	0.026	0.045	0.098	0.055	<0.0040	0.062	--	--	--	--	0.013	0.030	0.090	0.0062
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	--	--	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	0.00027	<0.00020	--	--	--	--	<0.00020	<0.00020	0.0027	<0.00020
Nickel (Ni)	0.00067	0.00068	0.0012	--	--	--	--	--	--	<0.00050	0.00069	0.00077	0.00079	0.00055	0.00068	--	--	--	--	0.00054	0.00057	0.00071	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	1.0	1.1	--	--	--	--	--	--	1.3	1.3	1.4	1.3	1.0	1.2	--	--	--	--	1.2	1.1	1.3	1.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	--	--	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	0.00029	<0.00020	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.6	1.4	1.3	--	--	--	--	--	--	1.5	1.0	1.2	1.6	1.4	1.5	--	--	--	--	1.5	1.0	1.2	0.99
Silver (Ag)	<0.00010	<0.00010	<0.00010	--	--	--	--	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	--	--	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.4	1.4	1.4	--	--	--	--	--	--	2.3	2.7	4.5	1.6	1.5	1.5	--	--	--	--	1.8	2.1	2.6	5.8
Strontium (Sr)	0.021	0.021	0.022	--	--	--	--	--	--	0.022	0.026	0.026	0.023	0.021	0.021	--	--	--	--	0.021	0.022	0.025	0.023
Sulphur (S)	2.1	1.6	2.2	--	--	--	--	--	--	1.6	3.3	3.3	2.7	0.91	2.7	--	--	--	--	1.7	1.5	3.3	1.7
Thallium (Tl)	<0.00020	<0.00020	<0.00020	--	--	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	0.0011	0.0015	0.0012	<0.0010	<0.0010	<0.0010	--	--	--	--	<0.0010	0.0012	0.0016	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	--	--	--	--	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	--	--	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.32	0.18	0.30	--	--	--	--	--	--	0.13	0.31	0.28	0.46	0.012	0.39	--	--	--	--	0.15	0.12	0.42	0.0077

Table B.12. Sherlett Creek Stations SC-4, SC-5, and SC-6 - Laboratory Data

Station	SC-4	SC-4	SC-4	SC-4-1A	SC-4-2A	SC-4	SC-4	SC-4	SC-5	SC-5	SC-5	SC-5-1A	SC-5	SC-5	SC-5	SC-5	SC-6	SC-6	SC-6-1A	SC-6-2A	SC-6	SC-6	SC-6	SC-6	SC-6
Parameter/Sample Date	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**1-Feb-22**	**18-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**21-Oct-21**	**1-Feb-22**
Physical/Chemical (mg/L)																									
pH (pH units)	6.65	6.61	6.51	--	--	6.44	7.00	6.77	6.65	6.57	6.54	--	6.46	7.02	6.79	7.04	6.73	6.52	--	--	6.49	7.13	6.82	6.80	7.08
Conductivity (µS/cm @ 25°C)	59	59	--	--	--	--	--	--	58	59	--	--	--	--	--	--	59	--	--	--	--	--	--	--	--
Alkalinity ($CaCO_3$)	24	24	27	--	--	26	26	27	23	24	30	--	26	25	25	30	24	27	--	--	25	24	23	25	28
Bicarbonate (HCO_3)	29	29	33	--	--	32	31	33	28	29	36	--	32	30	30	37	29	32	--	--	31	29	29	30	35
Carbonate (CO_3)	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	29.5	27.8	29.4	27.5	27.7	28.4	32.7	35.8	29.4	28.1	29.3	27.5	26.8	27.3	29.3	35.7	29.1	29.5	27.1	26.0	27.5	26.7	29.5	29.1	36.8
Hardness ($CaCO_3$)	21	28	17	--	--	31	29	--	29	28	27	--	29	28	--	33	28	29	--	--	29	30	--	30	34
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	29.4	--	--	--	--	--	--	27.2		--	--	--	--	--	--	26.4	--	--
Turbidity (NTU)	1.1	2.0	2.8	--	--	3.9	7.4	5.3	1.1	1.1	2.4	--	2.3	3.4	3.1	0.58	1.4	1.3	--	--	1.9	2.1	1.8	--	0.36
Total Suspended Solids (TSS)	2.0	3.7	3.5	--	--	3.7	7.5	1.4	2.6	1.3	<1.0	--	1.8	2.3	2.7	<1.0	3.4	<1.0	--	--	1.0	2.5	1.3	1.9	<0.99
Dissolved Organic Carbon (C)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13
Total Organic Carbon (C)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13
Dissolved Sulphate (SO_4)	<1.0	<1.0	<1.0	--	--	<1.0	1.9	2.7	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	1.1
Total Metals (mg/L)																									
Aluminum (Al)	0.049	0.062	0.13	0.10	0.10	0.12	0.57	0.15	0.046	0.056	0.068	0.081	0.076	0.11	0.089	0.019	0.062	0.033	0.026	0.031	0.087	0.042	0.040	0.13	0.014
Antimony (Sb)	<0.00060	0.00092	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00078	<0.00060	<0.00060	<0.00060	0.00098	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00073	0.0012	<0.00060	<0.00060
Arsenic (As)	0.00037	0.00052	0.00046	0.00045	0.00053	0.00067	0.00069	0.00053	0.00047	0.00059	0.00046	0.00053	0.00075	0.00061	0.00039	0.00042	0.00044	0.00047	0.00045	0.00047	0.00060	0.00041	0.00050	0.00043	0.00048
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000078	0.000029	<0.000020	0.000031	<0.000020	<0.000020	<0.000020	<0.000020	0.000023	<0.000020	0.000035	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000033	<0.000020
Calcium (Ca)	7.6	7.2	7.6	7.1	7.2	7.4	8.3	9.2	7.6	7.3	7.6	7.1	7.0	7.0	7.5	9.2	7.5	7.6	7.1	6.8	7.2	6.8	7.6	7.6	9.5
Chromium (Cr)	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	<0.0010	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00035	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0023	0.0016	0.0016	0.0082	0.0019	0.0026	0.0073	0.0038	0.0022	0.0020	0.0014	0.0016	0.0025	0.0029	0.0027	0.0019	0.0062	0.0010	0.0013	0.0013	0.0020	0.0012	0.0017	0.0058	0.0012
Iron (Fe)	0.22	0.29	0.34	0.43	0.41	0.55	1.2	0.84	0.22	0.36	0.26	0.38	0.46	0.48	0.52	0.18	0.23	0.18	0.29	0.29	0.32	0.24	0.27	0.38	0.15
Lead (Pb)	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	0.00079	0.00027	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00076	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	0.00024	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.5	2.4	2.5	2.4	2.3	2.4	2.9	3.1	2.5	2.4	2.5	2.4	2.3	2.4	2.6	3.1	2.5	2.5	2.3	2.2	2.3	2.3	2.6	2.4	3.2
Manganese (Mn)	0.020	0.031	0.037	0.046	0.037	0.059	0.12	0.081	0.02	0.032	0.025	0.033	0.056	0.052	0.050	0.0075	0.018	0.016	0.032	0.032	0.023	0.014	0.016	0.027	0.0058
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00035
Nickel (Ni)	0.00097	0.00066	0.00055	0.00060	0.00088	0.00067	0.0022	0.0011	0.00090	0.00052	<0.00050	0.00066	0.00069	0.00081	0.00053	0.00056	0.00092	0.00054	0.0015	0.00095	0.00087	0.00052	<0.00050	0.00087	0.00051
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	1.0	1.2	1.1	1.2	1.1	1.4	1.8	1.1	1.0	1.2	1.1	1.0	1.1	1.4	1.3	1.1	1.2	1.1	1.1	1.1	1.0	1.3	1.1	1.4
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.8	1.7	1.6	1.8	1.9	2.0	2.2	1.8	1.8	1.7	1.5	1.8	1.7	1.6	1.3	1.1	1.7	1.4	1.6	1.6	1.6	1.4	1.2	1.1	1.1
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.4	1.4	1.5	1.4	1.4	1.4	5.1	7.5	1.5	1.4	1.5	1.4	1.4	1.4	1.6	1.7	1.4	1.5	1.4	1.3	1.4	1.4	1.6	1.6	1.8
Strontium (Sr)	0.021	0.020	<0.020	0.021	0.020	0.021	0.022	0.023	0.021	0.021	<0.020	0.020	0.020	<0.020	<0.020	0.024	0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	0.021	0.024
Sulphur (S)	0.93	0.91	0.88	0.97	0.91	0.98	1.5	1.9	0.94	0.96	0.86	0.86	0.91	0.94	1.0	1.2	0.98	0.82	0.89	0.86	0.90	0.81	0.96	1.1	1.2
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0034	0.0051	0.0068	0.0068	0.0064	0.031	0.011	0.0010	0.0028	0.0022	0.0049	0.0063	0.0068	0.0041	0.0014	0.0026	<0.0010	0.0014	0.0019	0.0030	0.0017	0.0023	0.0047	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.0074	0.0032	<0.0030	0.0036	0.0041	0.0051	0.084	0.078	0.0045	0.0047	<0.0030	<0.0030	0.0074	0.0062	<0.0030	<0.0030	0.012	<0.0030	<0.0030	<0.0030	0.0068	<0.0030	<0.0030	0.0065	0.0031

Table B.12. Continued. Sherlett Creek Stations SC-4, SC-5, and SC-6 - Laboratory Data

Station	SC-4	SC-4	SC-4	SC-4-1A	SC-4-2A	SC-4	SC-4	SC-4	SC-5	SC-5	SC-5	SC-5-1A	SC-5	SC-5	SC-5	SC-5	SC-6	SC-6	SC-6-1A	SC-6-2A	SC-6	SC-6	SC-6	SC-6	SC-6
Parameter/Sample Date	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**18-Jul-21**	**26-Jul-21**	**9-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**1-Feb-22**	**18-Jul-21**	**9-Aug-21**	**22-Aug-21**	**22-Aug-21**	**5-Sep-21**	**21-Sep-21**	**4-Oct-21**	**21-Oct-21**	**1-Feb-22**
Dissolved Metals (mg/L)																									
Aluminum (Al)	0.024	0.018	0.024	--	--	0.023	0.037	0.033	0.024	0.017	0.022	--	0.023	0.026	0.022	0.014	0.025	0.016	--	--	0.018	0.013	0.012	0.022	0.013
Antimony (Sb)	<0.00060	0.00066	<0.00060	--	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00046	0.00046	0.00042	--	--	0.00044	0.00046	0.00049	0.00047	0.00039	0.00044	--	0.00052	0.00045	0.00039	0.00046	0.00039	0.00042	--	--	0.00051	0.00049	0.00047	0.00040	0.00042
Barium (Ba)	<0.010	<0.010	<0.010	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	--	--	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	--	<0.000020	<0.000020	<0.000020	<0.000020	0.000028	<0.000020	--	--	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Calcium (Ca)	5.2	7.2	4.3	--	--	8.1	7.6	7.8	7.5	7.4	6.9	--	7.5	7.3	7.1	8.7	7.3	7.4	--	--	7.5	7.9	6.9	7.9	8.9
Chromium (Cr)	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	--	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0015	0.0013	0.0012	--	--	0.0019	0.0024	0.0025	0.0014	0.0014	0.0011	--	0.0018	0.0021	0.0023	0.0015	0.0040	0.00083	--	--	0.0017	0.0016	0.0012	0.0031	0.00099
Iron (Fe)	0.17	0.14	0.16	--	--	0.27	0.26	0.28	0.14	0.17	0.14	--	0.21	0.22	0.22	0.13	0.13	0.11	--	--	0.17	0.11	0.11	0.15	0.12
Lead (Pb)	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.0	2.4	1.6	--	--	2.6	2.5	2.4	2.5	2.4	2.3	--	2.5	2.4	2.3	2.7	2.4	2.5	--	--	2.5	2.5	2.2	2.5	2.8
Manganese (Mn)	0.0056	<0.0040	0.0090	--	--	0.033	0.047	0.053	0.0072	<0.0040	0.011	--	0.0086	0.015	0.024	0.0056	<0.0040	0.0043	--	--	<0.0040	<0.0040	<0.0040	<0.0040	0.0044
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	0.0028	<0.00020	<0.00020
Nickel (Ni)	0.00062	0.00054	<0.00050	--	--	<0.00050	<0.00050	<0.00050	0.00059	0.00053	<0.00050	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	--	<0.00050	<0.00050	<0.00050	<0.00050	0.00056
Phosphorus (P)	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	0.93	1.0	1.0	--	--	1.3	1.2	1.2	1.1	1.0	1.0	--	1.1	1.1	1.1	1.3	1.0	1.1	--	--	1.2	1.1	1.0	1.2	1.3
Selenium (Se)	<0.00020	0.00024	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.6	1.3	1.3	--	--	1.6	1.1	1.2	1.5	1.5	1.3	--	1.4	1.1	1.1	0.98	1.5	1.2	--	--	1.4	1.0	1.0	0.82	0.98
Silver (Ag)	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.3	1.5	1.3	--	--	1.6	2.7	4.0	1.4	1.5	1.4	--	1.5	1.4	1.4	1.7	1.4	1.4	--	--	1.5	1.4	1.4	1.6	1.7
Strontium (Sr)	<0.020	0.021	<0.020	--	--	0.021	0.021	0.022	0.02	0.021	0.020	--	0.020	0.020	0.020	0.022	<0.020	0.021	--	--	0.020	0.021	<0.020	0.021	0.022
Sulphur (S)	0.99	0.84	0.87	--	--	0.91	1.0	1.3	0.95	0.96	0.79	--	0.90	0.83	0.90	1.0	0.97	0.77	--	--	0.89	0.75	0.83	1.0	1.1
Thallium (Tl)	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0011	<0.0010	--	--	0.0014	0.0010	0.0011	<0.0010	<0.0010	<0.0010	--	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.0010	0.0011	<0.0010	0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.0032	<0.0030	0.0032	--	--	<0.0030	0.0043	0.0036	<0.0030	<0.0030	<0.0030	--	<0.0030	<0.0030	<0.0030	<0.0030	0.0040	<0.0030	--	--	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B.13. Portage Lake Inflow and Conservation Dock - Laboratory Data

	Portage Lake Inflow		Conservation Dock	
Parameter/Sample Date	**6-Jul-21**		**6-Jul-21**	
Physical/Chemical (mg/L)				
pH (pH units)	6.99		6.97	
Alkalinity ($CaCO_3$)	25		23	
Bicarbonate (HCO_3)	30		28	
Carbonate (CO_3)	<1.0		<1.0	
Hydroxide (OH)	<1.0		<1.0	
Total Hardness ($CaCO_3$)	29.7		42.2	
Hardness ($CaCO_3$)	32		41	
Turbidity (NTU)	1.8		2.0	
Total Suspended Solids (TSS)	2.7		<1.0	
Metals (mg/L)	**Total**	**Dissolved**	**Total**	**Dissolved**
Aluminum (Al)	0.064	0.033	0.098	0.040
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00052	0.00044	0.00038	0.00034
Barium (Ba)	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00013	0.000058	0.00015	0.00010
Calcium (Ca)	7.8	8.3	12	11
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.018	0.0060	0.011	0.0089
Iron (Fe)	0.40	0.24	0.65	0.47
Lead (Pb)	0.0013	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.5	2.7	3.2	3.1
Manganese (Mn)	0.039	<0.0040	0.015	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.0011	<0.00050	0.0011	0.00064
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.1	1.2	1.4	1.4
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.6	1.5	1.5	1.2
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.7	1.8	1.8	1.8
Strontium (Sr)	0.021	0.022	0.026	0.025
Sulphur (S)	1.1	1.2	5.7	5.7
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0019	<0.0010	0.0025	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.043	0.029	0.054	0.040

Table B.14. Cold Lake Station CL2 - Laboratory Data

Sample Date	18-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		18-Mar-22	
Parameter/Station (depth)	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**
Physical/Chemical (mg/L)																
pH (pH units)	7.26	7.08	6.86	6.82	6.91	6.86	6.62	6.64	6.68	6.41	6.53	6.53	6.83	6.80	7.01	6.99
Alkalinity ($CaCO_3$)	36	24	23	23	23	23	27	23	24	25	26	25	25	24	30	28
Bicarbonate (HCO_3)	44	29	28	28	27	28	33	28	29	30	32	31	30	30	37	35
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	62.3	50.9	50.5	50.2	43.3	40.9	45.2	42.6	46.3	44.3	44.8	44.0	45.6	44.3	50.6	49.8
Hardness ($CaCO_3$)	62	49	45	45	49	47	45	44	44	49	46	46	45	45	50	48
Turbidity (NTU)	1.3	1.2	3.6	4.2	--	--	1.2	2.0	2.1	2.3	2.2	2.4	--	--	2.1	3.1
Total Suspended Solids (TSS)	2.5	2.7	2.7	2.1	1.9	2.2	<1.0	<1.0	2.0	2.1	<0.99	<1.0	<1.0	<0.97	<1.0	<0.99
Dissolved Organic Carbon (C)	--	--	13	13	--	--	12	12	--	--	12	12	12	12	14	11
Total Organic Carbon (C)	--	--	11	11	--	--	10	12	--	--	12	12	11	12	15	11
Dissolved Sulphate (SO_4)	19	21	27	24	25	24	22	21	22	22	22	23	20	20	22	25
Total Metals (mg/L)																
Aluminum (Al)	0.072	0.058	0.15	0.13	0.082	0.097	0.067	0.072	0.076	0.076	0.065	0.071	0.075	0.069	0.038	0.055
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00093	0.00069	0.00058	0.00050	0.00048	0.00046	0.00039	0.00043	0.00042	0.00043	0.00054	0.00052	0.00064	0.00049	0.00032	0.00029
Barium (Ba)	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00027	0.00012	0.00027	0.00026	0.00019	0.00024	0.00011	0.00014	0.000089	0.00011	0.00010	0.00010	0.000071	0.000053	0.000054	0.000047
Calcium (Ca)	17	14	14	14	12	11	13	12	13	12	13	12	13	12	14	14
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	0.00032	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.014	0.0094	0.015	0.015	0.012	0.011	0.0099	0.011	0.0081	0.0086	0.0086	0.0083	0.0081	0.0083	0.0074	0.0078
Iron (Fe)	0.58	0.68	1.5	1.4	0.92	0.86	0.66	0.97	0.66	0.82	0.63	0.74	0.95	0.96	0.48	0.76
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	5.0	3.9	3.6	3.5	3.2	3.0	3.3	3.1	3.4	3.2	3.2	3.2	3.4	3.2	3.9	3.6
Manganese (Mn)	0.024	0.011	0.054	0.059	0.022	0.018	0.011	0.019	0.013	0.022	0.015	0.019	0.022	0.024	0.0044	0.0049
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00064	<0.00020
Nickel (Ni)	0.0011	0.00075	0.00085	0.0010	0.0010	0.0029	0.00077	0.00061	0.00069	0.0011	0.00076	0.00078	0.00072	0.00079	0.0013	0.00082
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	2.1	1.6	1.5	1.5	1.5	1.4	1.5	1.5	1.6	1.5	1.5	1.4	1.5	1.5	1.8	1.7
Selenium (Se)	0.00033	<0.00020	<0.00020	0.00022	<0.00020	0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.4	1.7	1.8	2.0	1.5	1.4	1.3	1.6	1.4	1.4	1.0	1.2	1.3	1.2	1.1	1.3
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.7	2.0	1.9	1.8	1.7	1.6	1.9	1.9	1.9	1.9	1.8	1.8	2.0	1.9	2.4	2.2
Strontium (Sr)	0.037	0.028	0.028	0.027	0.025	0.025	0.028	0.027	0.029	0.027	0.027	0.027	0.026	0.026	0.031	0.029
Sulphur (S)	5.8	6.7	8.0	7.5	7.1	6.5	7.0	6.4	7.1	6.6	5.4	6.1	6.5	6.4	6.2	7.2
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0017	0.0017	0.0063	0.0030	0.0018	0.0020	0.0029	0.0019	0.0025	0.0022	0.0025	0.0027	0.0022	0.0015	<0.0010	0.0014
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.086	0.050	0.094	0.098	0.067	0.074	0.047	0.056	0.034	0.036	0.032	0.032	0.025	0.083	0.025	0.022

Table B.14. Continued. Cold Lake Station CL2 - Laboratory Data

Sample Date	18-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		18-Mar-22	
Parameter/Station (depth)	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**	**CL2 (sfc)**	**CL2 (btm)**
Dissolved Metals (mg/L)																
Aluminum (Al)	0.047	0.034	0.056	0.068	0.042	0.049	0.050	0.040	0.035	0.065	0.042	0.050	0.039	0.037	0.041	0.040
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00059	0.00043	0.00033	0.00041	0.00055	0.00029	0.00042	0.00047	0.00043	0.00047	0.00041	0.00036	0.00036	0.00036	0.00048	0.00052
Barium (Ba)	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.025	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00018	0.00010	0.00023	0.00022	0.00016	0.00017	0.00011	0.00015	0.00010	0.000096	0.000050	0.000073	0.000039	0.000042	0.000046	0.000041
Calcium (Ca)	17	14	13	13	13	13	13	12	12	14	13	13	13	13	14	13
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.011	0.0079	0.013	0.014	0.011	0.011	0.0089	0.010	0.0075	0.0087	0.0086	0.0084	0.0071	0.0071	0.0070	0.0076
Iron (Fe)	0.47	0.55	0.82	0.79	0.74	0.69	0.55	0.85	0.34	0.53	0.51	0.54	0.63	0.65	0.37	0.53
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	4.8	3.5	3.1	3.1	3.7	3.6	3.3	3.2	3.2	3.5	3.3	3.3	3.3	3.3	3.8	3.6
Manganese (Mn)	0.022	0.0077	0.024	0.030	<0.0040	<0.0040	<0.0040	0.013	<0.0040	0.011	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00081	0.00067	0.00073	0.00071	0.00077	0.00072	0.00080	0.00050	0.00099	0.0010	0.00070	0.00065	<0.00050	<0.00050	0.00057	0.00059
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	2.3	1.8	1.4	1.4	1.7	1.6	1.5	1.5	1.5	1.7	1.6	1.5	1.8	1.7	1.9	1.7
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.2	1.5	1.5	1.6	1.4	1.4	1.2	1.5	0.96	1.0	1.2	1.2	0.97	1.0	1.0	1.1
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.7	2.0	1.7	1.7	1.9	1.8	1.8	1.8	1.9	2.0	1.9	1.9	2.1	2.1	2.4	2.1
Strontium (Sr)	0.034	0.026	0.025	0.025	0.028	0.027	0.028	0.027	0.027	0.030	0.027	0.027	0.025	0.025	0.032	0.029
Sulphur (S)	6.0	6.4	7.3	6.6	7.3	6.9	7.2	6.6	6.1	5.4	7.5	7.4	5.8	6.0	5.8	6.6
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0015	<0.0010	<0.0010	0.0012	0.0013	<0.0010	0.0011	<0.0010	<0.0010	0.0022	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.082	0.043	0.083	0.091	0.059	0.059	0.042	0.050	0.032	0.039	0.028	0.029	0.017	0.017	0.027	0.021

Table B.15. Cold Lake Station CL4 - Laboratory Data

Sample Date	17-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**
Physical/Chemical (mg/L)																		
pH (pH units)	7.10	6.15	6.84	6.86	6.95	6.86	6.69	6.63	6.40	6.46	6.52	6.53	6.86	6.87	6.92	6.77	6.93	6.95
Alkalinity ($CaCO_3$)	29	32	23	24	24	23	25	23	24	26	26	26	25	25	26	25	35	26
Bicarbonate (HCO_3)	35	39	29	29	29	28	30	29	30	32	31	31	30	31	32	31	43	32
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	41.2	45.9	46.0	44.1	38.4	41.5	43.4	42.9	44.1	43.4	43.7	43.7	41.1	45.1	45.4	44.8	42.2	48.4
Hardness ($CaCO_3$)	39	44	42	40	44	49	43	49	44	44	51	44	43	41	46	46	41	49
Turbidity (NTU)	1.1	2.0	3.3	3.4	--	--	1.3	2.8	1.8	1.6	2.2	2.2	--	--	--	--	2.4	4.7
Total Suspended Solids (TSS)	2.7	2.0	3.3	1.0	3.4	3.7	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<0.96	<0.99	<1.0	<1.0	<1.0	<1.0
Dissolved Organic Carbon (C)	--	--	12	13	--	--	10	9.9	--	--	12	12	11	11	--	--	16	12
Total Organic Carbon (C)	--	--	11	10	--	--	10	10	--	--	12	12	12	12	--	--	18	11
Dissolved Sulphate (SO_4)	3.2	13	20	18	20	22	20	21	21	20	21	21	20	20	20	20	7.4	26
Total Metals (mg/L)																		
Aluminum (Al)	0.069	0.062	0.078	0.10	0.11	0.11	0.065	0.096	0.080	0.082	0.062	0.080	0.072	0.078	0.12	0.11	0.042	0.073
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00071	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00069
Arsenic (As)	0.00092	0.00078	0.00044	0.00045	0.00057	0.00044	0.00042	0.00049	0.00046	0.00047	0.00058	0.00062	0.00056	0.00053	0.00056	0.00049	0.00067	0.00054
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	0.011	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.033	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00015	0.00024	0.00022	0.00015	0.00021	0.00017	0.000086	0.00013	0.000084	0.000086	0.000093	0.00011	0.000059	0.000075	0.000043	0.000063	0.00012	0.000064
Calcium (Ca)	11	12	13	12	11	11	12	12	12	12	12	12	11	13	13	13	11	14
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0056	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0070	0.010	0.013	0.010	0.011	0.012	0.0087	0.011	0.0081	0.0076	0.0077	0.0082	0.0077	0.0082	0.0088	0.0085	0.0069	0.0096
Iron (Fe)	0.40	0.57	1.1	0.79	0.64	1.0	0.53	1.1	0.58	0.59	0.50	0.56	0.78	1.0	0.89	0.88	0.28	1.2
Lead (Pb)	0.00025	0.00036	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00029	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.5	3.6	3.4	3.3	3.0	3.1	3.3	3.2	3.2	3.2	3.2	3.2	3.0	3.3	3.3	3.3	3.6	3.6
Manganese (Mn)	0.029	0.025	0.042	0.036	0.014	0.029	0.010	0.029	0.013	0.014	0.013	0.019	0.014	0.019	0.014	0.014	0.015	0.034
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00087	0.00089	0.00068	<0.00050	0.0029	0.0014	0.0020	0.00073	0.00076	0.00074	0.00070	0.00084	0.00072	0.00056	0.00083	0.0016	0.00087	0.00069
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.5	1.4	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.5	1.6	1.6
Selenium (Se)	<0.00020	<0.00020	0.00024	<0.00020	0.00024	0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.5	2.1	1.7	1.5	1.3	1.5	1.4	1.6	1.2	1.2	0.91	0.98	1.1	1.2	1.2	1.2	1.3	1.4
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.9	1.8	1.9	1.6	1.7	1.9	1.8	1.9	1.9	1.8	1.9	1.8	1.9	2.1	2.1	2.6	2.2
Strontium (Sr)	0.026	0.026	0.026	0.027	0.025	0.026	0.028	0.027	0.028	0.027	0.027	0.031	0.024	0.026	0.028	0.028	0.030	0.030
Sulphur (S)	1.9	4.1	6.3	5.6	5.3	6.1	6.2	6.3	6.6	6.4	5.1	5.0	5.8	6.6	6.4	6.3	2.6	7.6
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0022	<0.0010	0.0039	0.0027	0.0019	0.0012	0.0023	0.0036	0.0019	0.0015	0.0020	0.0027	0.0031	0.0033	0.0039	0.014	0.0016	0.0018
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	0.00017	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.051	0.072	0.084	0.058	0.059	0.069	0.040	0.057	0.034	0.030	0.027	0.032	0.021	0.023	0.022	0.021	0.051	0.031

Table B.15. Continued. Cold Lake Station CL4 - Laboratory Data

Sample Date	17-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**	**CL4 (sfc)**	**CL4 (btm)**
Dissolved Metals (mg/L)																		
Aluminum (Al)	0.056	0.039	0.046	0.042	0.044	0.044	0.030	0.047	0.063	0.045	0.045	0.048	0.043	0.041	0.046	0.042	0.033	0.050
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00050	0.00046	0.00038	0.00040	0.00039	0.00037	0.00044	0.00039	0.00055	0.00042	0.00035	0.00045	0.00039	0.00039	0.00037	0.00036	0.00058	0.00047
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00013	0.00017	0.00018	0.00012	0.00012	0.00013	0.00011	0.00016	0.000075	0.000068	0.000059	0.000051	0.000035	0.000042	0.000037	0.000032	0.000077	0.000066
Calcium (Ca)	10	12	12	11	12	13	12	14	12	12	14	12	12	12	13	13	11	14
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0057	0.0083	0.012	0.0095	0.0096	0.010	0.0072	0.0095	0.0075	0.0070	0.0072	0.0078	0.0067	0.0071	0.0066	0.0079	0.0053	0.0088
Iron (Fe)	0.33	0.46	0.61	0.40	0.49	0.78	0.45	0.94	0.38	0.33	0.63	0.48	0.53	0.45	0.53	0.51	0.21	0.88
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.2	3.3	3.0	2.9	3.4	3.8	3.2	3.7	3.1	3.2	3.8	3.3	3.1	2.9	3.4	3.3	3.4	3.6
Manganese (Mn)	0.027	0.022	0.014	0.0071	<0.0040	0.0046	<0.0040	0.019	<0.0040	<0.0040	<0.0040	<0.0040	0.0063	<0.0040	<0.0040	<0.0040	0.012	0.028
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00068	0.00066	0.00062	0.00067	0.00087	0.00069	0.00066	0.00079	0.0011	0.00094	0.00058	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	0.00067
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	1.7	1.4	1.3	1.5	1.7	1.5	1.6	1.5	1.5	1.8	1.5	1.7	1.4	1.6	1.5	1.6	1.7
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.2	1.9	1.3	1.2	1.2	1.5	1.1	1.5	0.87	0.98	1.1	1.1	0.89	1.0	1.1	0.98	1.1	1.3
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.9	1.7	1.7	1.8	2.0	1.8	2.0	1.9	2.0	2.1	2.0	2.0	1.8	2.1	2.1	2.5	2.1
Strontium (Sr)	0.023	0.024	0.024	0.025	0.027	0.029	0.028	0.029	0.029	0.028	0.028	0.027	0.025	0.027	0.029	0.029	0.028	0.029
Sulphur (S)	1.8	4.3	5.7	5.1	5.6	7.4	6.2	6.2	5.3	5.6	6.1	6.7	5.0	5.2	6.3	6.4	2.6	7.6
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0010	0.0010	<0.0010	<0.0010	0.0019	<0.0010	<0.0010	<0.0010	0.0020	0.0015	<0.0010	0.0021	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	0.0012
Uranium (U)	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.051	0.070	0.066	0.052	0.055	0.057	0.031	0.045	0.029	0.031	0.022	0.024	0.014	0.016	0.019	0.017	0.039	0.026

Table B.16. Cold Lake Station CL5 - Laboratory Data

Sample Date	17-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**
Physical/Chemical (mg/L)																		
pH (pH units)	7.16	7.06	6.85	6.87	6.96	6.85	6.64	6.65	6.44	6.46	6.52	6.53	6.72	6.85	6.92	6.83	6.98	7.03
Alkalinity ($CaCO_3$)	27	24	24	24	23	24	28	30	25	26	25	26	24	25	26	26	30	28
Bicarbonate (HCO_3)	33	29	29	30	28	29	34	36	31	31	31	32	29	30	32	32	37	34
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	40.9	49.2	45.6	44.1	37.7	39.5	43.3	41.7	43.4	42.8	44.2	42.9	42.7	43.5	43.4	43.8	35.1	45.9
Hardness ($CaCO_3$)	40	49	40	40	44	46	42	42	45	44	47	45	38	43	46	47	36	46
Turbidity (NTU)	1.5	2.1	2.9	2.8	--	--	1.7	2.0	1.9	1.9	2.4	2.2	--	--	--	--	1.8	2.9
Total Suspended Solids (TSS)	1.8	2.3	2.5	2.3	3.4	1.7	<1.0	<1.0	1.2	<1.0	<0.97	<1.0	<1.0	<1.0	<1.0	<1.0	<0.97	<0.97
Dissolved Organic Carbon (C)	--	--	13	13	--	--	12	12	--	--	12	11	11	12	--	--	14	12
Total Organic Carbon (C)	--	--	10	10	--	--	10	10	--	--	12	12	12	12	--	--	15	12
Dissolved Sulphate (SO_4)	8	20	20	18	17	21	19	20	18	19	22	21	18	18	19	19	4.6	23
Total Metals (mg/L)																		
Aluminum (Al)	0.054	0.065	0.075	0.29	0.095	0.093	0.095	0.079	0.084	0.074	0.082	0.066	0.076	0.077	0.096	0.11	0.050	0.054
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00090	0.00083	0.00040	0.00037	0.00054	0.00049	0.00045	0.00040	0.00050	0.00042	0.00053	0.00056	0.00052	0.00049	0.00046	0.00047	0.00049	0.00040
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.000082	0.00015	0.00017	0.00014	0.00019	0.00014	0.00011	0.00010	0.000077	0.000072	0.000084	0.000090	0.000048	0.000053	0.000041	0.000066	0.000090	0.000042
Calcium (Ca)	11	13	13	12	10	11	12	11	12	12	12	12	12	12	12	12	9.2	13
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0055	0.0093	0.013	0.0097	0.011	0.012	0.0091	0.0079	0.0069	0.0070	0.0081	0.0074	0.0073	0.0076	0.0073	0.0078	0.0046	0.0078
Iron (Fe)	0.33	0.95	1.0	0.75	0.64	0.76	0.51	0.53	0.45	0.60	0.63	0.61	0.72	0.74	0.66	0.73	0.30	0.63
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00056	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.4	3.9	3.3	3.3	3.0	3.0	3.3	3.2	3.2	3.2	3.2	3.1	3.2	3.3	3.2	3.2	2.9	3.5
Manganese (Mn)	0.021	0.021	0.038	0.034	0.016	0.021	0.012	0.014	0.015	0.021	0.015	0.015	0.013	0.014	0.012	0.014	0.014	0.0054
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0002	<0.00020	<0.00020
Nickel (Ni)	0.0011	0.00063	<0.00050	<0.00050	0.0012	0.00077	0.00070	0.00063	0.00072	0.00061	0.00080	0.00071	0.00058	0.00065	0.00084	0.00086	0.00073	0.00061
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.6	1.5	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.3	1.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	0.00023	0.00021	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.9	2.0	1.7	1.4	1.4	1.4	1.3	1.2	1.1	1.2	1.1	1.0	1.0	1.1	1.1	1.2	1.3	1.1
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	2.0	1.8	1.9	1.6	1.7	1.9	1.9	2.0	1.9	1.8	1.8	1.9	1.9	2.0	2.1	2.4	2.0
Strontium (Sr)	0.026	0.027	0.026	0.027	0.024	0.024	0.029	0.027	0.028	0.027	0.028	0.027	0.025	0.026	0.028	0.029	0.025	0.029
Sulphur (S)	2.7	5.2	6.1	6.0	4.8	5.7	5.9	5.7	5.9	5.8	5.6	5.5	5.9	5.9	5.9	6.0	1.8	6.3
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0019	0.0033	0.0024	0.0028	0.0022	0.0027	0.0018	0.0018	0.0020	0.0021	0.0063	0.0023	0.0027	0.0038	0.0034	0.0017	0.0011
Uranium (U)	<0.00010	<0.00010	<0.00010	0.00015	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.036	0.054	0.078	0.057	0.054	0.059	0.038	0.036	0.025	0.030	0.030	0.027	0.019	0.020	0.018	0.020	0.035	0.024

Table B.16. Continued. Cold Lake Station CL5 - Laboratory Data

Sample Date	17-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**	**CL5 (sfc)**	**CL5 (btm)**
Dissolved Metals (mg/L)																		
Aluminum (Al)	0.033	0.035	0.050	0.043	0.041	0.036	0.039	0.033	0.037	0.036	0.047	0.047	0.032	0.033	0.037	0.037	0.023	0.050
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00043	0.00044	0.00035	0.00042	0.00039	0.00039	0.00045	0.00042	0.00044	0.00040	0.00045	0.00046	0.00029	0.00032	0.00037	0.00045	0.00058	0.00038
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.043	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.000095	0.00012	0.00016	0.000099	0.00013	0.00011	0.000082	0.000079	0.000058	0.000073	0.000068	0.000061	0.000037	0.000036	0.000029	0.000035	0.00010	0.000061
Calcium (Ca)	11	14	11	11	12	13	12	12	13	12	13	12	11	12	13	13	9.6	13
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0045	0.0089	0.011	0.0084	0.0096	0.0092	0.0075	0.0069	0.0059	0.0059	0.0079	0.0076	0.0059	0.0061	0.0066	0.0064	0.0042	0.0071
Iron (Fe)	0.27	0.95	0.53	0.37	0.47	0.54	0.40	0.42	0.29	0.32	0.51	0.45	0.26	0.45	0.37	0.40	0.19	0.42
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.2	3.6	2.9	2.9	3.5	3.6	3.2	3.1	3.3	3.2	3.5	3.3	2.7	3.2	3.4	3.4	3.0	3.4
Manganese (Mn)	0.018	0.013	0.011	0.0055	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0081	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.011	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00058	<0.00050	0.00062	0.00062	0.00059	0.00075	0.00074	0.00054	0.00084	0.0012	0.00056	0.00052	<0.00050	<0.00050	<0.00050	0.00053	0.00067	0.00062
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	1.8	1.4	1.4	1.5	1.7	1.5	1.4	1.6	1.6	1.6	1.6	1.3	1.7	1.6	1.6	1.4	1.6
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.7	1.6	1.3	1.1	1.3	1.3	1.1	1.1	0.76	0.80	1.1	1.1	0.92	0.82	0.87	0.87	1.1	1.0
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	2.0	1.7	1.8	1.8	1.9	1.8	1.8	2.2	2.0	2.0	1.9	1.7	2.1	2.1	2.2	2.3	2.1
Strontium (Sr)	0.024	0.025	0.024	0.025	0.027	0.028	0.028	0.028	0.032	0.029	0.028	0.027	0.027	0.025	0.029	0.030	0.025	0.029
Sulphur (S)	2.7	6.3	5.4	5.0	5.1	5.9	5.9	5.7	4.7	4.8	6.8	7.2	5.2	5.5	5.9	5.8	1.8	6.3
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	0.0018	0.0010	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.036	0.049	0.063	0.046	0.048	0.049	0.028	0.029	0.025	0.026	0.025	0.024	0.012	0.012	0.015	0.016	0.033	0.021

Table B.17. Cold Lake Station CL6 - Laboratory Data

Sample Date	17-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		18-Mar-22	
Parameter/Station (depth)	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**
Physical/Chemical (mg/L)																
pH (pH units)	7.14	6.99	6.87	6.84	6.95	6.90	6.68	6.68	6.47	6.47	6.55	6.46	6.87	6.88	6.94	7.02
Alkalinity ($CaCO_3$)	28	28	24	25	25	24	27	27	28	26	27	26	25	25	32	29
Bicarbonate (HCO_3)	34	35	30	31	30	30	33	33	34	32	32	32	30	30	39	35
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	46.2	45.4	44.1	41.3	37.2	36.4	38.5	40.0	40.7	41.3	40.9	41.1	41.7	39.6	45.2	42.0
Hardness ($CaCO_3$)	44	43	39	38	43	43	43	44	40	42	41	42	42	41	46	42
Turbidity (NTU)	1.1	1.5	2.4	2.1	--	--	1.5	1.4	2.3	2.4	2.1	1.8	--	--	2.5	1.6
Total Suspended Solids (TSS)	1.6	2.1	1.5	2.3	<1.0	1.1	<1.0	<1.0	2.6	2.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Organic Carbon (C)	--	--	12	11	--	--	12	12	--	--	12	10	11	11	13	14
Total Organic Carbon (C)	--	--	11	9.6	--	--	10	10	--	--	12	11	12	11	14	11
Dissolved Sulphate (SO_4)	9.8	10	18	16	18	17	18	17	17	17	18	17	16	16	17	16
Total Metals (mg/L)																
Aluminum (Al)	0.054	0.045	0.079	0.054	0.090	0.096	0.066	0.067	0.073	0.067	0.098	0.079	0.079	0.070	0.042	0.027
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.0011	0.00073	0.00046	0.00045	0.00054	0.00048	0.00045	0.00046	0.00044	0.00046	0.00060	0.00056	0.00053	0.00049	0.00069	0.00053
Barium (Ba)	0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.011	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	0.027	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00011	0.000032	0.00015	0.000094	0.00012	0.000081	0.000061	0.000067	0.000060	0.000050	0.000067	0.000054	0.000041	0.000047	0.00011	0.000046
Calcium (Ca)	12	12	12	11	10	9.9	11	11	11	11	11	11	11	11	12	11
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0064	0.0037	0.011	0.0075	0.0093	0.0085	0.0065	0.0072	0.0058	0.0054	0.0060	0.0060	0.0060	0.0057	0.0067	0.0055
Iron (Fe)	0.33	0.46	0.87	0.45	0.58	0.43	0.35	0.37	0.36	0.35	0.31	0.33	0.45	0.43	0.37	0.17
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00083	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.8	3.9	3.3	3.1	2.9	2.8	3.0	3.1	3.1	3.1	3.1	3.1	3.2	3.0	3.9	3.3
Manganese (Mn)	0.019	0.027	0.032	0.022	0.013	0.012	0.011	0.011	0.014	0.012	0.011	0.012	0.013	0.012	0.015	0.0049
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00033	<0.00020
Nickel (Ni)	0.00083	0.00072	0.00081	0.00052	0.0010	0.0012	0.00051	0.00082	0.00084	0.00069	0.00072	0.00073	0.00051	0.00059	0.0012	0.00059
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.6	1.7	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.5	1.4	1.4	1.5	1.4	1.8	1.5
Selenium (Se)	0.00034	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00025	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020
Silicon (Si)	1.9	1.6	1.5	1.1	1.2	0.95	0.94	0.99	0.98	0.94	0.77	0.82	0.93	0.83	0.93	0.80
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.2	2.2	1.9	1.9	1.6	1.6	1.8	1.9	1.9	1.9	1.8	1.8	2.0	1.9	2.5	2.2
Strontium (Sr)	0.029	0.029	0.026	0.027	0.024	0.025	0.027	0.028	0.027	0.027	0.027	0.028	0.027	0.025	0.033	0.030
Sulphur (S)	3.3	3.3	5.7	4.6	4.9	4.6	6.2	5.2	5.3	5.1	4.6	5.0	5.3	5.0	5.0	4.8
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0022	0.0013	0.0026	0.0022	0.0021	0.0042	0.0016	0.0012	0.0023	0.0016	0.0026	0.0029	0.0036	0.0028	0.0034	0.0025
Uranium (U)	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.043	0.015	0.059	0.040	0.046	0.040	0.026	0.029	0.024	0.021	0.019	0.020	0.017	0.014	0.024	0.018

Table B.17. Continued. Cold Lake Station CL6 - Laboratory Data

Sample Date	17-Feb-21		8-Jun-21		28-Jun-21		19-Jul-21		9-Aug-21		30-Aug-21		27-Sep-21		18-Mar-22	
Parameter/Station (depth)	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**	**CL6 (sfc)**	**CL6 (btm)**
Dissolved Metals (mg/L)																
Aluminum (Al)	0.034	0.031	0.042	0.032	0.034	0.032	0.030	0.032	0.031	0.044	0.037	0.035	0.026	0.025	0.020	0.023
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00054	0.00053	0.00042	0.00042	0.00042	0.00054	0.00063	0.00055	0.00047	0.00044	0.00045	0.00043	0.00036	0.00033	0.00070	0.00045
Barium (Ba)	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.000078	<0.00010	0.00012	0.000062	0.000091	0.000070	0.000048	0.000058	0.000044	0.000052	0.000037	0.000034	0.000025	0.000029	0.000086	0.000033
Calcium (Ca)	12	11	11	11	11	11	12	12	11	12	11	12	11	11	12	11
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0052	0.0030	0.0091	0.0061	0.0079	0.0062	0.0058	0.0059	0.0057	0.0058	0.0055	0.0058	0.0050	0.0048	0.0050	0.0046
Iron (Fe)	0.27	0.37	0.40	0.23	0.42	0.30	0.28	0.29	0.19	0.21	0.24	0.21	0.26	0.22	0.22	0.11
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00029	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.5	3.5	2.9	2.8	3.4	3.4	3.3	3.4	3.0	3.1	3.2	3.2	3.1	3.0	3.8	3.3
Manganese (Mn)	0.016	0.023	0.0079	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.013	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0027	0.00022	<0.00020
Nickel (Ni)	0.00059	0.00059	0.00060	<0.00050	0.00061	0.00056	0.00053	0.00064	0.00086	0.00082	<0.00050	0.00056	<0.00050	<0.00050	0.00069	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.7	1.7	1.4	1.3	1.5	1.5	1.5	1.6	1.4	1.5	1.4	1.5	1.7	1.7	1.9	1.6
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.6	1.3	1.1	0.83	1.1	0.87	0.82	0.83	0.65	0.67	0.73	0.73	0.58	0.71	0.86	0.71
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.1	2.1	1.8	1.8	1.8	1.9	1.9	2.0	1.9	2.6	1.9	2.0	2.1	2.1	2.5	2.2
Strontium (Sr)	0.026	0.026	0.024	0.025	0.026	0.028	0.028	0.029	0.029	0.042	0.027	0.027	0.025	0.025	0.032	0.029
Sulphur (S)	3.2	3.3	5.3	4.5	5.1	5.0	5.1	5.2	4.8	4.4	5.5	6.0	4.9	5.1	4.9	4.7
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0016	0.0014	<0.0010	<0.0010	0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.036	0.015	0.049	0.028	0.039	0.027	0.019	0.021	0.019	0.020	0.014	0.015	0.0097	0.0077	0.019	0.016

Table B.18. Cold Lake Station CL3 (mixing zone) - Laboratory Data

Sample Date	18-Feb-21		1-Jun-21		8-Jun-21		16-Jun-21		21-Jun-21		28-Jun-21		5-Jul-21		12-Jul-21		19-Jul-21		26-Jul-21		1-Aug-21		9-Aug-21		16-Aug-21	
Parameter/Station (depth)	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**
Physical/Chemical (mg/L)																										
pH (pH units)	6.20	6.18	6.77	6.67	6.71	6.75	7.14	7.27	7.01	7.06	6.89	6.98	7.02	6.90	6.65	6.64	6.70	6.70	6.59	6.57	6.65	6.64	6.51	6.51	6.59	6.57
Alkalinity ($CaCO_3$)	44	41	18	15	15	20	17	23	22	22	20	22	21	22	22	22	23	24	24	23	29	28	28	27	25	25
Bicarbonate (HCO_3)	54	50	21	19	18	25	21	28	26	27	25	27	26	27	27	26	29	29	29	28	35	34	34	33	31	30
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	40.3	38.0	56.8	70.8	68.4	47.4	63.2	51.6	45.4	45.0	51.3	45.2	56.7	50.4	55.5	60.0	46.1	46.2	47.8	51.0	43.8	49.0	47.0	48.2	47.4	39.7
Hardness ($CaCO_3$)	37	36	56	70	68	48	67	52	45	46	56	48	60	51	52	61	41	46	47	50	48	46	44	44	45	47
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity (NTU)	0.78	0.66	5.6	7.4	6.5	3.5	3.3	2.5	2.2	2.3	--	--	2.6	2.2	2.4	2.2	1.6	1.5	1.7	1.9	0.50	1.4	1.4	1.7	2.2	2.7
Total Suspended Solids (TSS)	<1.0	1.3	2.7	2.9	3.4	2.9	1.7	1.4	1.7	1.6	1.7	1.5	2.3	2.2	3.4	1.6	<1.0	<1.0	1.2	1.3	<0.99	<1.0	1.3	1.8	<1.0	2.1
Dissolved Organic Carbon (C)	--	--	--	--	11	12	--	--	--	--	--	--	--	--	--	--	13	11	--	--	--	--	--	--	--	--
Total Organic Carbon (C)	--	--	--	--	11	12	--	--	--	--	--	--	--	--	--	--	13	11	--	--	--	--	--	--	--	--
Dissolved Sulphate (SO_4)	6.0	8.2	--	--	48	26	42	26	24	24	35	25	40	31	34	37	24	22	25	28	23	23	24	25	22	25
Total Metals (mg/L)																										
Aluminum (Al)	0.067	0.058	0.11	0.13	0.12	0.12	0.093	0.080	0.12	0.10	0.073	0.086	0.070	0.084	0.070	0.066	0.063	0.064	0.068	0.074	0.071	0.058	0.071	0.075	0.092	0.095
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.0007	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00069	0.00049	0.00043	0.00041	0.00050	0.00072	0.00039	0.00032	0.00053	0.00045	0.00033	0.00039	0.00030	0.00043	0.00041	0.00038	0.00043	0.00050	0.00050	0.00046	0.00036	0.00043	0.00033	0.00045	0.00051	0.00041
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	0.017	<0.010	<0.010	0.010	0.011
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.035	<0.020	0.10	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00020	0.00017	0.00034	0.00053	0.00066	0.00035	0.00039	0.00024	0.00022	0.00023	0.00030	0.00020	0.00032	0.00023	0.00019	0.00029	0.00012	0.00011	0.00012	0.00016	0.000089	0.00011	0.000089	0.00011	0.00013	0.00013
Calcium (Ca)	11	10	16	21	20	13	18	15	13	13	15	13	17	14	16	18	13	13	13	15	12	14	13	14	13	11
Chromium (Cr)	<0.0010	<0.0010	<0.0010	0.0031	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.00051	0.00088	0.0010	0.00044	0.00045	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0079	0.0070	0.019	0.025	0.031	0.020	0.021	0.014	0.018	0.014	0.016	0.013	0.016	0.014	0.013	0.014	0.0098	0.010	0.010	0.010	0.0080	0.0087	0.0080	0.0081	0.0087	0.0087
Iron (Fe)	0.44	0.40	2.4	4.5	4.0	1.4	2.3	1.3	0.97	1.0	1.5	0.95	1.5	1.1	1.2	1.4	0.64	0.66	0.73	0.88	0.65	0.68	0.69	0.78	0.77	0.66
Lead (Pb)	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	0.00027	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.3	3.1	4.0	4.7	4.4	3.3	4.3	3.7	3.2	3.2	3.5	3.2	3.7	3.5	3.8	3.9	3.4	3.4	3.5	3.6	3.2	3.4	3.4	3.5	3.5	2.9
Manganese (Mn)	0.027	0.026	0.082	0.13	0.11	0.052	0.061	0.036	0.025	0.026	0.031	0.019	0.032	0.022	0.022	0.027	0.011	0.012	0.012	0.014	0.012	0.013	0.012	0.013	0.021	0.015
Molybdenum (Mo)	0.00027	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00080	0.00096	0.0011	0.0014	0.0015	0.0012	0.0011	0.00091	0.0014	0.00077	0.00086	0.00084	0.00092	0.0011	0.00096	0.00094	0.00064	0.00083	0.00096	0.0026	0.0011	0.0013	0.00099	0.00059	0.00076	0.00090
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.6	1.4	1.7	1.9	1.9	1.5	1.8	1.6	1.5	1.4	1.6	1.5	1.7	1.6	1.7	1.8	1.6	1.6	1.5	1.6	1.5	1.5	1.6	1.6	1.6	1.3
Selenium (Se)	<0.00020	0.00026	0.00020	0.00025	0.00025	0.00027	0.00020	0.00024	0.00032	0.00027	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020
Silicon (Si)	2.3	2.2	2.2	2.2	1.8	1.8	1.6	1.5	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.2	1.3	1.2	1.2	1.2	1.2	1.4	0.90
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.0	1.8	1.8	1.9	1.9	1.8	1.9	1.9	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	2.1	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.6
Strontium (Sr)	0.024	0.022	0.028	0.031	0.031	0.026	0.027	0.025	0.025	0.025	0.028	0.027	0.028	0.027	0.028	0.029	0.029	0.028	0.028	0.043	0.027	0.072	0.026	0.026	0.029	0.025
Sulphur (S)	2.1	2.1	11	17	17	7.7	13	8.1	7.4	7.4	10	7.5	12	9.6	11	13	7.0	6.8	7.3	8.5	6.6	6.9	7.2	7.6	6.8	5.2
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0023	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0012	0.0038	0.0044	0.0036	0.0057	0.0026	0.0018	0.0042	0.0039	0.0028	0.0027	0.0016	0.0036	0.0022	0.0027	0.0024	0.0020	0.0018	0.0022	0.0044	0.0055	0.0025	0.0019	0.0028	0.0027
Uranium (U)	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00034	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00016	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.065	0.056	0.12	0.17	0.22	0.12	0.13	0.085	0.074	0.076	0.093	0.073	0.10	0.083	0.070	0.082	0.046	0.049	0.048	0.058	0.040	0.048	0.033	0.033	0.035	0.037

Table B.18. Continued. Cold Lake Station CL3 (mixing zone) - Laboratory Data

Sample Date	23-Aug-21		30-Aug-21		6-Sep-21		13-Sep-21		20-Sep-21		27-Sep-21		28-Sep-21		4-Oct-21		13-Oct-21		21-Oct-21		18-Mar-22		18-Mar-22
Parameter/Station (depth)	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (btm)**
Physical/Chemical (mg/L)																							**Duplicate**
pH (pH units)	6.43	6.43	6.49	6.40	6.44	6.47	7.22	7.28	7.21	7.19	7.02	6.98	--	--	6.75	6.80	6.67	6.65	6.80	6.91	6.90	6.94	6.93
Alkalinity ($CaCO_3$)	33	31	27	23	26	24	26	24	25	25	25	25	--	--	23	23	26	27	25	27	31	30	29
Bicarbonate (HCO_3)	40	37	33	28	32	30	32	29	31	31	31	31	--	--	28	28	32	33	31	32	38	36	35
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	46.4	44.5	48.9	53.0	43.7	43.9	45.0	44.4	44.8	44.4	43.9	42.8	--	--	47.8	47.2	44.4	46.1	45.6	46.3	40.3	40.4	39.6
Hardness ($CaCO_3$)	45	44	56	56	47	47	52	52	44	45	43	44	--	--	--	--	52	51	48	47	40	42	42
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	44.0	43.8	--	--	--	--	--	--	--
Turbidity (NTU)	2.5	2.4	2.4	2.7	2.8	3.0	4.5	5.2	3.9	3.9	--	--	3.7	3.8	--	4.2	4.6	4.4	--	--	1.7	2.4	2.5
Total Suspended Solids (TSS)	<1.0	1.5	1.3	1.9	<1.0	<1.0	1.9	2.5	1.3	1.3	<1.0	1.5	--	--	<1.0	<1.0	<1.0	2.1	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Organic Carbon (C)	--	--	13	12	11	11	--	--	--	--	11	11	--	--	--	--	--	--	--	--	12	13	--
Total Organic Carbon (C)	--	--	11	11	11	11	--	--	--	--	11	12	--	--	--	--	--	--	--	--	14	12	--
Dissolved Sulphate (SO_4)	23	23	24	31	22	22	21	21	22	22	21	22	--	--	22	22	22	22	21	21	11	15	15
Total Metals (mg/L)																							
Aluminum (Al)	0.076	0.074	0.058	0.074	0.055	0.060	0.084	0.088	0.082	0.086	0.080	0.079	--	--	0.072	0.069	0.077	0.079	0.082	0.089	0.056	0.050	0.054
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00054	0.00051	0.00052	0.00039	0.00058	0.00056	0.00061	0.00052	0.00049	0.00052	0.00039	0.00051	--	--	0.00049	0.00045	0.00040	0.00056	0.00046	0.00053	0.00040	0.00034	0.00043
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	0.028	<0.020	<0.020	<0.020	0.022	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.000073	0.000087	0.00011	0.00011	0.000072	0.00010	0.000065	0.00014	0.000075	0.000084	0.000067	0.000082	--	--	0.000058	0.000075	0.000067	0.000066	0.000048	0.000048	0.000073	0.000068	0.00011
Calcium (Ca)	13	13	14	15	12	12	13	12	12	12	12	12	--	--	13	13	13	13	13	13	11	11	11
Chromium (Cr)	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0083	0.0080	0.0088	0.0097	0.0078	0.0082	0.0083	0.0084	0.0095	0.0093	0.0081	0.0077	--	--	0.0085	0.0080	0.0081	0.0087	0.0085	0.0092	0.0062	0.0060	0.0073
Iron (Fe)	0.91	0.89	0.87	1.3	0.83	0.85	0.94	1.1	1.0	1.0	0.90	0.89	--	--	1.2	1.1	1.0	1.1	1.0	0.98	0.34	0.37	0.37
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00035
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.4	3.2	3.5	3.7	3.1	3.2	3.3	3.3	3.4	3.3	3.2	3.2	--	--	3.5	3.5	3.2	3.3	3.3	3.3	3.4	3.3	3.2
Manganese (Mn)	0.023	0.023	0.021	0.023	0.019	0.020	0.019	0.020	0.021	0.021	0.015	0.015	--	--	0.017	0.017	0.017	0.018	0.015	0.014	0.012	0.0079	0.0075
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00083	0.00059	0.00088	0.00079	0.00053	0.00056	0.00066	0.00081	0.00092	0.00077	<0.00050	0.00067	--	--	0.0024	0.00065	<0.00050	<0.00050	0.00082	0.00078	0.00056	0.00062	0.00075
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	1.5	1.7	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.5	--	--	1.8	1.7	1.4	1.5	1.5	1.5	1.5	1.5	1.4
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.1	1.1	--	--	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.1	1.0
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.8	2.0	2.0	1.9	1.8	1.9	1.8	1.9	1.9	2.0	2.0	--	--	2.1	2.1	1.9	2.0	2.0	2.0	2.1	2.0	2.0
Strontium (Sr)	0.028	0.028	0.027	0.027	0.028	0.028	0.028	0.027	0.025	0.025	0.026	0.025	--	--	0.026	0.026	0.028	0.029	0.028	0.028	0.027	0.027	0.026
Sulphur (S)	7.4	7.2	7.4	9.2	6.7	6.7	6.8	6.8	6.5	6.6	6.7	6.8	--	--	7.0	6.9	6.4	6.6	6.7	6.8	3.3	4.2	4.2
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0026	0.0019	0.0020	0.0027	0.0029	0.0025	0.0026	0.0041	0.0038	0.0030	0.0030	0.0037	--	--	0.0018	0.0025	0.0030	0.0032	0.0038	0.0044	0.0020	0.0020	0.0024
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.053	0.036	0.037	0.039	0.033	0.028	0.026	0.029	0.032	0.031	0.022	0.024	--	--	0.022	0.023	0.020	0.022	0.021	0.022	0.035	0.028	0.028

Table B.18. Continued. Cold Lake Station CL3 (mixing zone) - Laboratory Data

Sample Date	18-Feb-21		1-Jun-21		8-Jun-21		16-Jun-21		21-Jun-21		28-Jun-21		5-Jul-21		12-Jul-21		19-Jul-21		26-Jul-21		1-Aug-21		9-Aug-21		16-Aug-21	
Parameter/Station (depth)	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**
Dissolved Metals (mg/L)																										
Aluminum (Al)	0.046	0.047	0.060	0.064	0.056	0.058	0.057	0.051	0.061	0.056	0.050	0.052	0.039	0.041	0.038	0.040	0.049	0.044	0.036	0.034	0.037	0.036	0.040	0.039	0.049	0.043
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00061	0.00055	0.00042	0.00024	0.00038	0.00051	0.00050	0.00032	0.00043	0.00042	0.00033	0.00030	0.00034	0.00036	0.00039	0.00031	0.00044	0.00041	0.00038	0.00039	0.00038	0.00035	0.00038	0.00042	0.00048	0.00042
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00014	0.00015	0.00032	0.00047	0.00045	0.00024	0.00038	0.00020	0.00016	0.00016	0.00028	0.00018	0.00024	0.00020	0.00016	0.00024	0.00011	0.000097	0.00011	0.00012	0.000069	0.000087	0.000082	0.000079	0.000082	0.000065
Calcium (Ca)	9.9	9.7	16	20	20	14	20	15	13	13	16	13	17	15	15	18	11	13	13	14	13	13	12	12	13	13
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00041	0.00075	0.00032	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0066	0.0071	0.016	0.022	0.021	0.014	0.018	0.012	0.012	0.012	0.015	0.012	0.013	0.011	0.011	0.013	0.0087	0.0086	0.0087	0.0092	0.0079	0.0085	0.0075	0.0074	0.0072	0.0070
Iron (Fe)	0.27	0.29	1.7	3.1	3.0	1.0	1.7	0.97	0.75	0.76	1.2	0.76	1.2	0.96	0.79	1.0	0.47	0.48	0.57	0.62	0.52	0.50	0.49	0.52	0.52	0.63
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.9	2.8	3.9	4.6	4.5	3.4	4.4	3.6	3.2	3.3	3.9	3.5	3.9	3.6	3.4	3.8	3.0	3.4	3.4	3.5	3.6	3.3	3.2	3.2	3.2	3.3
Manganese (Mn)	0.023	0.022	0.071	0.11	0.086	0.029	0.038	0.0081	<0.0040	<0.0040	0.0048	<0.0040	0.011	0.0048	0.0048	0.0077	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0021	<0.00020	<0.00020
Nickel (Ni)	0.00079	0.00067	0.0010	0.0011	0.0012	0.00069	0.00082	0.00051	<0.00050	0.00057	0.00095	0.00072	0.00088	0.00064	0.00089	0.0010	<0.00050	<0.00050	0.00081	0.00055	0.00066	0.00073	0.00064	0.00064	0.00057	0.00073
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.3	1.3	1.6	1.9	2.0	1.5	2.0	1.7	1.6	1.6	1.7	1.6	1.8	1.6	1.6	1.8	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.0	1.9	2.0	1.9	1.7	1.6	1.4	1.4	1.5	1.4	1.5	1.4	1.4	1.4	1.3	1.4	1.2	1.2	1.2	1.1	1.1	1.1	0.99	0.99	1.0	1.0
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.7	1.8	1.9	2.0	1.9	2.1	1.9	1.7	1.8	1.9	1.9	1.9	1.8	1.8	1.9	1.7	1.9	1.9	1.9	2.0	1.9	1.8	1.8	1.8	1.9
Strontium (Sr)	0.026	0.025	0.028	0.032	0.029	0.025	0.028	0.025	0.023	0.024	0.029	0.027	0.029	0.027	0.028	0.031	0.026	0.027	0.028	0.029	0.029	0.028	0.027	0.027	0.028	0.029
Sulphur (S)	2.1	2.6	11	17	17	8.6	13	8.1	7.8	8.0	11	7.5	13	10	9.4	12	6.7	6.7	7.8	8.0	6.7	6.9	6.6	6.9	6.1	6.8
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	0.0021	0.0015	0.0017	<0.0010	<0.0010	0.0019	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	0.0012	0.0013	<0.0010	<0.0010	0.0015	0.0013
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.046	0.049	0.12	0.18	0.16	0.090	0.12	0.070	0.063	0.064	0.085	0.064	0.088	0.068	0.061	0.079	0.041	0.040	0.041	0.039	0.036	0.037	0.030	0.031	0.026	0.028

Table B.18. Continued. Cold Lake Station CL3 (mixing zone) - Laboratory Data

Sample Date	23-Aug-21		30-Aug-21		6-Sep-21		13-Sep-21		20-Sep-21		27-Sep-21		28-Sep-21		4-Oct-21		13-Oct-21		21-Oct-21		18-Mar-22		18-Mar-22
Parameter/Station (depth)	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (sfc)**	**CL3 (btm)**	**CL3 (btm)**
Dissolved Metals (mg/L)																							
Aluminum (Al)	0.036	0.035	0.044	0.044	0.039	0.039	0.037	0.035	0.039	0.038	0.035	0.046	--	--	0.045	0.041	0.027	0.031	0.048	0.045	0.034	0.024	0.032
Antimony (Sb)	<0.0030	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	<0.0010	<0.0010	0.00049	0.00046	0.00044	0.00044	0.00026	0.00043	0.00037	0.00040	0.00038	0.00036	--	--	0.00035	0.00043	0.00044	0.00042	0.00043	0.00038	0.00039	0.00050	0.00045
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.00010	<0.00010	0.000070	0.000095	0.000046	0.000059	0.000057	0.000063	0.000041	0.000055	0.000044	0.000039	--	--	0.000032	0.000043	0.000041	0.000042	0.000036	0.000041	0.000060	0.000077	0.00011
Calcium (Ca)	13	12	16	16	13	13	14	14	13	13	12	12	--	--	12	12	15	14	13	13	11	12	11
Chromium (Cr)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.0015	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0077	0.0078	0.0081	0.0086	0.0071	0.0068	0.0073	0.0071	0.0078	0.0075	0.0064	0.0068	--	--	0.0067	0.0069	0.0070	0.0075	0.0073	0.007	0.0055	0.0059	0.0065
Iron (Fe)	0.52	0.52	0.74	1.0	0.64	0.65	0.66	0.67	0.56	0.58	0.60	0.59	--	--	0.53	0.56	0.55	0.61	0.66	0.68	0.23	0.23	0.26
Lead (Pb)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.3	3.1	4.1	3.9	3.4	3.4	3.9	3.8	3.2	3.3	3.1	3.2	--	--	3.1	3.1	3.7	3.7	3.4	3.4	3.2	3.3	3.2
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	--	--	<0.0040	<0.0040	0.0045	<0.0040	<0.0040	<0.0040	0.0090	0.0058	0.0049
Molybdenum (Mo)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	0.0023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00063
Nickel (Ni)	<0.0025	<0.0025	0.00064	0.00050	0.00050	0.00054	0.00062	0.00053	0.00061	0.00054	<0.00050	0.00093	--	--	0.00063	<0.00050	<0.00050	0.00051	<0.00050	0.00053	0.00053	0.00060	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.4	1.7	1.7	1.6	1.6	1.8	1.7	1.5	1.5	1.7	1.8	--	--	1.5	1.5	1.7	1.7	1.6	1.6	1.5	1.5	1.5
Selenium (Se)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	0.99	0.98	1.1	1.1	1.1	1.1	1.1	1.1	0.89	0.88	0.93	0.93	--	--	1.0	1.0	1.1	1.1	1.1	1.1	1.0	0.93	0.95
Silver (Ag)	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.8	2.2	2.1	1.9	1.9	2.1	2.1	1.8	1.8	1.9	1.9	--	--	1.9	1.8	2.2	2.1	2.1	2.1	2.2	2.2	2.1
Strontium (Sr)	0.028	0.028	0.031	0.030	0.028	0.027	0.030	0.030	0.027	0.028	0.024	0.026	--	--	0.028	0.028	0.032	0.031	0.029	0.029	0.026	0.027	0.027
Sulphur (S)	6.5	6.4	7.5	9.1	6.5	6.9	6.5	6.4	5.7	5.9	6.1	6.0	--	--	6.3	6.3	6.5	6.2	6.6	6.8	3.1	4.4	4.5
Thallium (Tl)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0050	<0.0050	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	0.0017	0.0014	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.027	0.028	0.028	0.032	0.022	0.023	0.021	0.020	0.023	0.021	0.015	0.017	--	--	0.018	0.018	0.018	0.017	0.026	0.017	0.037	0.031	0.030

Table B.19. Cold Lake Station CL7 (mixing zone) - Laboratory Data

Sample Date	18-Feb-21		1-Jun-21		8-Jun-21		16-Jun-21		21-Jun-21		28-Jun-21		5-Jul-21		12-Jul-21		19-Jul-21		26-Jul-21		1-Aug-21		9-Aug-21		16-Aug-21	
Parameter/Station (depth)	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**
Physical/Chemical (mg/L)																										
pH (pH units)	6.18	6.15	6.71	6.64	6.77	6.79	7.21	7.23	6.99	6.98	6.88	6.89	6.97	7.07	6.78	6.69	6.70	6.71	6.57	6.55	6.69	6.65	6.43	6.56	6.57	6.58
Alkalinity ($CaCO_3$)	38	41	17	15	21	21	16	20	21	21	20	22	17	21	24	23	24	24	25	23	26	26	24	29	25	24
Bicarbonate (HCO_3)	46	50	20	18	25	25	20	25	26	25	24	27	21	26	29	28	29	30	30	29	31	32	30	36	30	29
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	44.5	39.7	63.1	76.3	57.5	51.8	62.4	58.7	56.2	48.7	50.9	44.4	54.4	51.5	43.6	44.4	45.2	46.7	47.1	48.5	46.1	47.3	48.0	48.7	46.8	47.6
Hardness ($CaCO_3$)	42	37	64	75	57	53	64	57	52	49	53	50	55	53	45	44	44	42	50	54	47	49	47	44	49	47
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity (NTU)	0.81	0.96	5.8	8.1	5.7	4.8	3.3	2.6	2.3	2.7	--	--	2.4	1.9	1.7	1.6	1.4	1.6	1.8	1.9	1.4	1.5	1.7	1.7	2.1	2.6
Total Suspended Solids (TSS)	<1.0	1.0	2.4	3.7	3.5	2.8	4.9	1.5	1.1	<1.0	1.9	1.4	1.7	1.1	2.3	1.4	<1.0	<1.0	2.5	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.1
Dissolved Sulphate (SO_4)	11	9.2	--	--	36	32	40	35	33	29	33	27	39	31	23	23	22	21	26	28	24	26	23	24	21	22
Total Metals (mg/L)																										
Aluminum (Al)	0.065	0.055	0.12	0.14	0.086	0.11	0.098	0.084	0.10	0.10	0.075	0.083	0.075	0.077	0.065	0.059	0.060	0.069	0.081	0.065	0.073	0.071	0.083	0.077	0.098	0.088
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00070	0.00056	0.00039	0.00042	0.00051	0.00061	0.00038	0.00033	0.00045	0.00046	0.00033	0.00030	0.00037	0.00043	0.00034	0.00034	0.00039	0.00047	0.00040	0.00044	0.00039	0.00034	0.00034	0.00037	0.00058	0.00045
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	0.010	0.010	<0.010	<0.010	0.010	0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.035	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00020	0.00016	0.00044	0.00056	0.00040	0.00040	0.00040	0.00033	0.00036	0.00030	0.00031	0.00024	0.00028	0.00024	0.00012	0.00012	0.00012	0.00010	0.00010	0.00014	0.00009	0.00011	0.000074	0.000091	0.00013	0.00013
Calcium (Ca)	12	11	18	22	17	15	18	17	16	14	15	13	16	15	12	12	13	13	13	14	13	13	13	14	13	13
Chromium (Cr)	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.00073	0.0010	0.00052	0.00062	0.00045	0.00035	0.00034	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0094	0.0079	0.022	0.028	0.019	0.021	0.021	0.018	0.022	0.015	0.015	0.014	0.015	0.014	0.0092	0.0088	0.0098	0.011	0.0085	0.0099	0.0087	0.0088	0.0081	0.0081	0.0085	0.0086
Iron (Fe)	0.46	0.40	3.3	5.1	2.4	2.2	2.3	1.9	1.8	1.2	1.4	1.0	1.4	1.2	0.69	0.75	0.64	0.68	0.65	0.84	0.69	0.80	0.68	0.78	0.73	0.78
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0004	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.5	3.2	4.3	5.0	3.9	3.6	4.2	4.1	3.8	3.4	3.5	3.1	3.7	3.6	3.1	3.2	3.4	3.5	3.4	3.5	3.4	3.4	3.5	3.5	3.4	3.5
Manganese (Mn)	0.023	0.022	0.10	0.14	0.074	0.067	0.059	0.051	0.051	0.032	0.029	0.020	0.028	0.023	0.012	0.013	0.011	0.012	0.010	0.014	0.013	0.014	0.011	0.013	0.021	0.021
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00083	0.00075	0.0015	0.0018	0.0011	0.0013	0.0012	0.0011	0.0010	0.00082	0.0011	0.0017	0.00093	0.00081	0.0013	0.00070	0.00056	0.00094	0.0015	0.00074	0.00080	0.00089	0.00074	0.00072	0.00071	0.0010
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.7	1.5	1.8	2.0	1.8	1.6	1.8	1.8	1.6	1.5	1.6	1.4	1.7	1.6	1.4	1.5	1.5	1.6	1.5	1.5	1.6	1.5	1.6	1.6	1.5	1.6
Selenium (Se)	0.00027	0.00022	0.00021	0.00021	0.00021	0.00029	0.00024	0.00027	0.00030	0.00036	<0.00020	0.00025	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00025	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.1	2.0	2.1	2.2	1.7	1.8	1.6	1.5	1.7	1.6	1.6	1.5	1.6	1.6	1.3	1.4	1.3	1.4	1.1	1.2	1.3	1.3	1.2	1.2	1.4	1.3
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.1	1.8	1.9	1.9	1.9	1.8	1.9	1.9	1.8	1.7	1.9	1.8	1.9	1.9	1.8	1.8	1.9	2.0	1.8	1.8	1.9	1.9	2.0	1.9	1.9	2.0
Strontium (Sr)	0.026	0.023	0.029	0.033	0.029	0.027	0.026	0.026	0.027	0.026	0.028	0.026	0.028	0.028	0.026	0.026	0.028	0.029	0.043	0.028	0.028	0.029	0.026	0.026	0.029	0.029
Sulphur (S)	3.3	2.8	14	19	11	9.7	12	11	12	8.9	10	7.6	11	9.7	6.8	7.3	6.8	7.0	6.4	7.9	7.0	7.8	7.1	7.5	6.7	6.9
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0011	<0.0010	0.0035	0.0040	0.0023	0.0031	0.0024	0.0023	0.0023	0.0041	0.0025	0.0023	0.0023	0.0018	0.0027	0.0018	0.0023	0.0024	0.0024	0.0021	0.0017	0.0023	0.0023	0.0024	0.0026	0.0038
Uranium (U)	0.00011	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.074	0.063	0.14	0.19	0.13	0.14	0.13	0.11	0.12	0.089	0.093	0.078	0.084	0.080	0.048	0.043	0.045	0.046	0.043	0.046	0.040	0.043	0.032	0.034	0.034	0.036

Table B.19. Continued. Cold Lake Station CL7 (mixing zone) - Laboratory Data

Sample Date	23-Aug-21		30-Aug-21		6-Sep-21		13-Sep-21		20-Sep-21		27-Sep-21		4-Oct-21		13-Oct-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**
Physical/Chemical (mg/L)																				
pH (pH units)	6.43	6.43	6.50	6.49	6.48	6.48	7.28	7.28	7.13	7.12	7.01	6.99	6.83	6.80	6.65	6.66	6.79	6.91	6.94	6.92
Alkalinity ($CaCO_3$)	32	29	27	26	26	27	25	24	24	25	24	27	24	25	28	25	25	26	30	30
Bicarbonate (HCO_3)	39	36	32	31	32	33	30	30	29	31	29	33	29	31	34	31	31	32	37	36
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	45.2	47.7	48.0	47.5	42.8	43.8	42.8	43.9	44.1	45.8	42.8	43.8	47.6	46.8	45.7	44.7	46.7	46.5	38.5	41.1
Hardness ($CaCO_3$)	44	43	52	50	47	46	50	51	45	45	44	44	--	--	52	51	48	48	40	42
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	43.6	43.3	--	--	--	--	--	--
Turbidity (NTU)	2.6	2.5	2.3	2.5	3.7	3.4	5.1	5.0	3.9	3.9	--	--	4.00	4.2	4.6	4.6	--	--	1.2	1.4
Total Suspended Solids (TSS)	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	1.4	2.9	<1.0	<1.0	<1.0	<0.99	1.2	<0.99	<1.0	2.8	<0.99	<1.0	<1.0	<1.0
Dissolved Sulphate (SO_4)	23	24	23	23	21	22	21	21	22	23	22	22	22	22	22	22	22	21	9.2	13
Total Metals (mg/L)																				
Aluminum (Al)	0.079	0.072	0.073	0.074	0.065	0.069	0.081	0.083	0.075	0.083	0.082	0.078	0.077	0.069	0.085	0.074	0.088	0.094	0.040	0.045
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00042	0.00041	0.00045	0.00048	0.00061	0.00061	0.00061	0.00054	0.00048	0.00049	0.00053	0.00044	0.00049	0.00043	0.00050	0.00039	0.00045	0.00054	0.00045	0.00035
Barium (Ba)	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.000093	0.00010	0.000089	0.00009	0.000074	0.00011	0.000070	0.000097	0.000064	0.00010	0.00011	0.000068	0.000071	0.000059	0.000047	0.000064	0.000056	0.000042	0.000061	0.000061
Calcium (Ca)	13	13	14	13	12	12	12	12	12	13	12	12	13	13	13	13	13	13	10	11
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0098	0.0087	0.0090	0.0092	0.0080	0.0085	0.0077	0.0080	0.0092	0.010	0.0082	0.0076	0.0090	0.0082	0.0083	0.0086	0.0092	0.0091	0.0049	0.0067
Iron (Fe)	0.93	0.99	0.88	0.92	0.89	0.95	0.89	0.96	1.0	1.1	0.86	0.89	1.2	1.1	1.1	1.0	1.1	0.98	0.27	0.34
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.2	3.4	3.5	3.4	3.1	3.2	3.2	3.2	3.3	3.4	3.1	3.2	3.5	3.5	3.3	3.2	3.4	3.3	3.2	3.3
Manganese (Mn)	0.022	0.024	0.018	0.018	0.020	0.020	0.018	0.020	0.021	0.022	0.015	0.015	0.018	0.017	0.018	0.017	0.015	0.014	0.011	0.0087
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.0097	0.00064	0.00065	0.00079	0.00067	0.00088	0.00072	0.00074	0.0055	0.00085	0.00067	0.00055	0.00075	0.00059	0.00079	0.00060	0.00089	0.00075	0.00052	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.6	1.5	1.5	1.7	1.7	1.5	1.4	1.6	1.5	1.5	1.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.1	1.1	1.2	1.2	1.3	1.2	1.2	1.2	1.1	1.1
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.8	1.9	2.0	2.0	1.8	1.9	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.1
Strontium (Sr)	0.028	0.029	0.027	0.026	0.027	0.028	0.026	0.027	0.025	0.026	0.025	0.026	0.026	0.026	0.028	0.028	0.029	0.028	0.026	0.027
Sulphur (S)	7.1	7.7	7.0	6.9	6.6	6.7	6.6	6.7	6.4	6.8	6.6	6.7	6.8	6.7	6.7	6.5	6.9	6.8	2.9	4.0
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0028	0.0025	0.0020	0.0025	0.0026	0.0026	0.0039	0.0036	0.0033	0.0031	0.0031	0.0029	0.0032	0.0023	0.0026	0.0021	0.0035	0.0038	0.0015	0.0015
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.038	0.040	0.033	0.033	0.031	0.035	0.025	0.027	0.029	0.032	0.025	0.022	0.023	0.023	0.021	0.021	0.022	0.023	0.035	0.032

Table B.19. Continued. Cold Lake Station CL7 (mixing zone) - Laboratory Data

Sample Date	18-Feb-21		1-Jun-21		8-Jun-21		16-Jun-21		21-Jun-21		28-Jun-21		5-Jul-21		12-Jul-21		19-Jul-21		26-Jul-21		1-Aug-21		9-Aug-21		16-Aug-21	
Parameter/Station (depth)	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**
Dissolved Metals (mg/L)																										
Aluminum (Al)	0.046	0.046	0.060	0.063	0.055	0.057	0.056	0.053	0.055	0.057	0.049	0.050	0.042	0.043	0.041	0.041	0.047	0.049	0.035	0.030	0.035	0.033	0.043	0.039	0.048	0.045
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00048	0.00047	0.00035	0.00034	0.00036	0.00043	0.00046	0.00027	0.00036	0.00042	0.00036	0.00035	0.00034	0.00043	0.00046	0.00040	0.00039	0.00043	0.00044	0.00038	0.00040	0.00046	0.00050	0.00049	0.00043	0.00051
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00017	0.00017	0.00041	0.00050	0.00033	0.00030	0.00035	0.00029	0.00024	0.00021	0.00026	0.00018	0.00023	0.00020	0.00011	0.00010	0.000097	0.00011	0.00012	0.00012	0.000097	0.000098	0.000085	0.000078	0.000073	0.000072
Calcium (Ca)	11	10	18	22	16	15	19	16	15	14	15	14	16	15	13	12	12	12	14	15	13	14	13	12	14	13
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.00054	0.00085	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0082	0.0077	0.019	0.023	0.016	0.016	0.017	0.015	0.015	0.014	0.014	0.012	0.012	0.012	0.0092	0.0085	0.0088	0.0091	0.0093	0.0087	0.0082	0.0086	0.0072	0.0075	0.0070	0.0072
Iron (Fe)	0.32	0.29	2.4	3.6	1.9	1.5	1.5	1.2	1.0	0.93	1.1	0.86	1.0	0.91	0.54	0.52	0.47	0.47	0.58	0.59	0.51	0.58	0.45	0.49	0.53	0.55
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.2	2.9	4.3	4.9	3.9	3.7	4.2	3.9	3.6	3.5	3.7	3.6	3.8	3.7	3.1	3.0	3.3	3.1	3.7	3.9	3.5	3.5	3.4	3.2	3.5	3.4
Manganese (Mn)	0.020	0.020	0.092	0.12	0.056	0.043	0.032	0.020	0.013	0.0072	<0.0040	<0.0040	0.0069	0.0075	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	<0.00020	0.00027	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0012	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00066	0.00069	0.0010	0.0012	0.0011	0.00094	0.00066	0.00062	<0.00050	0.00056	0.00089	0.00089	0.00086	0.00082	0.00072	0.00082	<0.00050	0.00050	0.00065	0.00064	0.00072	0.00086	0.00069	0.00075	0.00069	0.00071
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	1.3	1.8	2.0	1.7	1.7	1.9	1.8	1.7	1.6	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.6	1.6	1.5	1.6	1.6	1.5	1.6	1.6
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00055	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.9	1.9	1.9	1.9	1.6	1.6	1.4	1.4	1.4	1.4	1.5	1.4	1.3	1.3	1.2	1.1	1.2	1.2	1.1	1.0	1.1	1.1	0.98	1.0	1.0	1.0
Silver (Ag)	<0.00010	0.00023	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.0	1.8	1.9	2.0	1.9	1.9	2.0	1.9	1.8	1.8	1.9	2.0	1.8	1.9	1.9	1.8	1.9	1.8	2.0	2.1	1.9	1.9	2.0	1.8	2.0	2.0
Strontium (Sr)	0.027	0.026	0.030	0.033	0.026	0.026	0.028	0.026	0.025	0.024	0.029	0.028	0.028	0.028	0.028	0.026	0.027	0.026	0.029	0.030	0.028	0.029	0.028	0.027	0.029	0.029
Sulphur (S)	3.3	2.9	14	19	12	10	13	11	11	9.4	10	8.4	11	9.8	6.5	6.7	6.9	6.7	7.9	7.8	6.9	7.6	6.5	6.8	6.1	6.3
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0018	<0.0010	<0.0010
Titanium (Ti)	0.0017	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0014	0.0021	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	0.0014	0.0010	<0.0010	<0.0010	0.0013	0.0012	<0.0010	0.0012	<0.0010
Uranium (U)	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.056	0.051	0.15	0.19	0.12	0.11	0.11	0.094	0.086	0.076	0.084	0.070	0.075	0.068	0.045	0.046	0.043	0.041	0.041	0.041	0.034	0.038	0.034	0.031	0.027	0.028

Table B.19. Continued. Cold Lake Station CL7 (mixing zone) - Laboratory Data

Sample Date	23-Aug-21		30-Aug-21		6-Sep-21		13-Sep-21		20-Sep-21		27-Sep-21		4-Oct-21		13-Oct-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**	**CL7 (sfc)**	**CL7 (btm)**
Dissolved Metals (mg/L)																				
Aluminum (Al)	0.036	0.039	0.043	0.050	0.038	0.039	0.035	0.036	0.038	0.039	0.039	0.029	0.049	0.040	0.026	0.030	0.050	0.045	0.029	0.032
Antimony (Sb)	<0.0030	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	<0.0010	<0.0010	0.00040	0.00047	0.00045	0.00040	0.00023	0.00033	0.00049	0.00050	0.00037	0.00040	0.00051	0.00044	0.00041	0.00042	0.00039	0.00042	0.00041	0.00043
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.00010	<0.00010	0.000065	0.000062	0.000048	0.00010	0.000047	0.000055	0.000052	0.000060	0.000036	0.000042	0.000046	0.000048	0.000049	0.000057	0.000036	0.000032	0.000077	0.000078
Calcium (Ca)	12	12	14	14	13	13	14	14	13	13	12	12	12	12	15	14	13	13	11	11
Chromium (Cr)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.0015	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0076	0.0078	0.0080	0.0083	0.0070	0.0072	0.0070	0.0072	0.0077	0.0079	0.0061	0.0064	0.0074	0.0072	0.0062	0.0073	0.0073	0.0073	0.0050	0.0054
Iron (Fe)	0.53	0.61	0.67	0.65	0.60	0.62	0.67	0.70	0.57	0.60	0.60	0.55	0.54	0.57	0.63	0.55	0.65	0.65	0.21	0.26
Lead (Pb)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.1	3.0	3.8	3.6	3.5	3.4	3.8	3.8	3.2	3.2	3.3	3.2	3.1	3.1	3.7	3.6	3.5	3.4	3.2	3.3
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0049	<0.0040	<0.0040	0.0093	0.0059
Molybdenum (Mo)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0028	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.0025	<0.0025	<0.00050	0.00059	<0.00050	<0.00050	0.00067	0.00073	0.00069	0.00060	<0.00050	<0.00050	0.00054	0.00054	<0.00050	0.00053	<0.00050	0.00051	0.00056	0.00058
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.4	1.6	1.6	1.6	1.6	1.7	1.7	1.5	1.5	1.7	1.7	1.4	1.4	1.7	1.7	1.6	1.6	1.5	1.6
Selenium (Se)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	0.98	1.0	1.1	1.1	1.1	1.1	1.1	1.1	0.89	0.88	0.92	0.91	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0
Silver (Ag)	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.8	1.7	2.1	1.9	1.9	1.9	2.1	2.1	1.8	1.8	1.9	2.0	1.9	1.8	2.2	2.2	2.1	2.1	2.3	2.2
Strontium (Sr)	0.027	0.027	0.030	0.029	0.027	0.028	0.029	0.029	0.028	0.027	0.026	0.025	0.028	0.028	0.031	0.031	0.029	0.029	0.027	0.027
Sulphur (S)	6.5	7.0	6.7	7.0	6.6	6.6	6.8	6.6	5.6	6.0	6.0	6.1	6.3	6.2	6.4	6.6	6.8	6.6	2.8	3.9
Thallium (Tl)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	0.0019	0.0011	0.0012	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	<0.0010
Uranium (U)	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.026	0.027	0.024	0.026	0.021	0.024	0.020	0.021	0.022	0.023	0.015	0.015	0.019	0.018	0.016	0.019	0.017	0.017	0.040	0.032

Table B.20. Cold Lake Station CL8 (mixing zone) - Laboratory Data

Sample Date	18-Feb-21		1-Jun-21		8-Jun-21		16-Jun-21		21-Jun-21		28-Jun-21		5-Jul-21		12-Jul-21		19-Jul-21		26-Jul-21		1-Aug-21		9-Aug-21		16-Aug-21	
Parameter/Station (depth)	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**
Physical/Chemical (mg/L)																										
pH (pH units)	6.19	6.13	6.77	6.79	6.80	6.82	7.22	7.25	7.00	7.01	6.96	6.93	7.10	6.96	6.70	6.67	6.72	6.71	6.60	6.59	6.65	6.64	6.51	6.51	6.60	6.57
Alkalinity ($CaCO_3$)	41	38	21	22	20	22	18	22	23	22	21	22	23	24	24	24	23	24	24	23	25	27	29	30	24	25
Bicarbonate (HCO_3)	50	46	25	26	25	27	22	26	28	27	26	27	28	29	29	29	28	30	29	29	30	32	35	36	29	31
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	40.7	40.9	55.8	57.4	50.0	48.3	60.8	53.3	45.1	45.0	48.0	43.7	48.6	42.3	44.6	45.5	45.4	45.9	46.7	49.2	43.4	44.8	49.0	48.9	47.4	43.4
Hardness ($CaCO_3$)	36	36	55	57	52	48	60	52	45	45	51	49	48	44	45	44	43	43	45	43	44	49	45	43	45	44
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity (NTU)	0.72	0.83	4.3	4.5	5.0	4.3	3.4	2.5	2.3	2.3	--	--	2.0	1.8	0.74	1.6	1.4	1.5	1.6	1.6	1.3	1.6	2.2	1.9	2.1	2.2
Total Suspended Solids (TSS)	2.7	1.0	2.7	2.1	2.5	2.4	1.2	4.3	<1.0	<1.0	2.7	1.7	1.6	2.1	2.1	1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	1.1	1.7	1.9
Dissolved Sulphate (SO_4)	6.0	9.9	--	--	29	24	39	30	24	24	29	27	28	20	23	24	22	22	22	24	22	24	23	24	21	20
Total Metals (mg/L)																										
Aluminum (Al)	0.064	0.059	0.12	0.12	0.11	0.090	0.098	0.095	0.10	0.11	0.11	0.082	0.082	0.081	0.060	0.061	0.068	0.062	0.068	0.070	0.078	0.070	0.066	0.076	0.087	0.099
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00075	0.00061	0.00051	0.00046	0.00050	0.00047	0.00045	0.00043	0.00048	0.00053	0.00024	0.00023	0.00029	0.00041	0.00033	0.00036	0.00049	0.00044	0.00048	0.00032	0.00032	0.00037	0.00042	0.00046	0.00057	0.00059
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.014	<0.010	<0.010	<0.010	<0.010	0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	0.058	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00016	0.00020	0.00033	0.00033	0.00037	0.00023	0.00038	0.00029	0.00021	0.00018	0.00025	0.00021	0.00018	0.00015	0.00012	0.00014	0.00012	0.00012	0.00012	0.000095	0.000093	0.00011	0.000086	0.00010	0.00013	0.00011
Calcium (Ca)	11	11	16	16	14	14	17	15	13	13	14	12	14	12	13	13	13	13	13	14	12	13	14	14	13	12
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.00052	0.00049	0.00048	0.00031	0.00041	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0079	0.0086	0.018	0.019	0.019	0.015	0.020	0.016	0.013	0.013	0.014	0.012	0.012	0.0096	0.0098	0.0095	0.010	0.0099	0.0096	0.0077	0.0083	0.0084	0.0080	0.0082	0.0086	0.0074
Iron (Fe)	0.42	0.46	2.2	2.3	1.8	1.6	2.1	1.6	0.97	1.0	1.1	0.95	1.0	0.70	0.90	0.75	0.67	0.65	0.69	0.77	0.63	0.68	0.70	0.74	0.72	0.62
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.3	3.2	3.9	4.0	3.5	3.4	4.2	3.8	3.2	3.2	3.4	3.1	3.4	3.1	3.2	3.3	3.4	3.4	3.4	3.5	3.2	3.3	3.6	3.5	3.5	3.2
Manganese (Mn)	0.027	0.027	0.079	0.081	0.061	0.055	0.054	0.045	0.025	0.026	0.023	0.018	0.018	0.013	0.014	0.012	0.012	0.012	0.011	0.013	0.012	0.013	0.012	0.013	0.021	0.018
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00084	0.00080	0.0011	0.0011	0.0011	0.0014	0.0012	0.0010	0.00072	0.00091	0.0010	0.0010	0.00080	0.00094	0.00085	0.00088	0.00052	0.00068	0.0012	0.00073	0.00074	0.00087	0.00077	0.00067	0.00099	0.00068
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.6	1.5	1.7	1.7	1.6	1.5	1.8	1.6	1.5	1.5	1.6	1.5	1.6	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.7	1.6	1.6	1.5
Selenium (Se)	0.00023	0.00043	0.00027	0.00027	0.00026	0.00025	0.00024	0.00024	0.00025	0.00032	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020
Silicon (Si)	2.3	2.0	2.1	2.2	1.8	1.8	1.6	1.5	1.6	1.6	1.6	1.5	1.6	1.4	1.5	1.4	1.4	1.3	1.4	1.3	1.3	1.2	1.2	1.2	1.3	1.2
Silver (Ag)	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	2.0	1.9	1.8	1.9	1.9	1.8	1.9	1.9	1.7	1.7	1.9	1.8	1.9	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	1.8	2.0	2.0	2.0	1.9
Strontium (Sr)	0.024	0.023	0.028	0.028	0.027	0.027	0.026	0.025	0.025	0.025	0.029	0.026	0.027	0.025	0.026	0.026	0.028	0.029	0.032	0.055	0.027	0.028	0.027	0.027	0.029	0.028
Sulphur (S)	2.1	3.4	10	11	8.9	8.0	11	8.9	7.4	7.4	8.5	7.4	8.5	6.3	7.7	7.1	6.8	6.9	7.2	7.6	6.6	7.0	7.5	7.5	6.7	6.0
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	0.0019	0.0029	0.0034	0.0043	0.0033	0.0027	0.0027	0.0032	0.0035	0.0021	0.0035	0.0029	0.0033	0.0021	0.0029	0.0030	0.0022	0.0024	0.0027	0.0025	0.0022	0.0017	0.0025	0.0031	0.0033
Uranium (U)	0.00011	0.00013	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00018	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.063	0.068	0.12	0.12	0.12	0.096	0.12	0.097	0.071	0.072	0.083	0.071	0.067	0.052	0.044	0.048	0.045	0.044	0.046	0.038	0.036	0.041	0.034	0.032	0.035	0.031

Table B.20. Continued. Cold Lake Station CL8 (mixing zone) - Laboratory Data

Sample Date	23-Aug-21		30-Aug-21		6-Sep-21		13-Sep-21		20-Sep-21		27-Sep-21		4-Oct-21		13-Oct-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**
Physical/Chemical (mg/L)																				
pH (pH units)	6.41	6.43	6.50	6.49	6.51	6.50	7.27	7.28	7.13	7.11	6.98	6.99	6.78	6.84	6.68	6.65	6.81	6.90	6.94	6.96
Alkalinity ($CaCO_3$)	29	30	26	25	25	24	26	27	27	25	26	25	25	23	25	27	25	25	30	29
Bicarbonate (HCO_3)	35	37	31	30	31	30	32	33	32	30	32	31	30	28	30	33	31	31	36	35
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	46.1	46.0	47.7	49.6	41.9	41.9	42.4	45.2	43.5	44.7	43.2	44.1	45.2	47.8	45.4	44.5	46.1	46.7	39.7	43.8
Hardness ($CaCO_3$)	45	44	49	55	46	46	51	51	45	45	43	43	--	--	53	52	48	48	41	45
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	43.6	44.2	--	--	--	--	--	--
Turbidity (NTU)	2.4	2.4	2.2	3.0	3.4	3.0	4.3	4.2	4.1	3.9	--	--	4.0	4.0	4.6	4.8	--	--	1.7	2.4
Total Suspended Solids (TSS)	1.1	<1.0	1.1	1.5	<1.0	<1.0	2.7	1.5	1.5	<1.0	<0.99	1.7	1.6	4.5	<0.96	<1.0	<0.99	<1.0	<0.96	<1.0
Dissolved Sulphate (SO_4)	23	23	23	28	21	21	21	21	22	23	22	22	21	22	22	22	22	22	13	19
Total Metals (mg/L)																				
Aluminum (Al)	0.070	0.074	0.073	0.080	0.072	0.072	0.071	0.086	0.083	0.073	0.083	0.099	0.069	0.078	0.081	0.076	0.088	0.087	0.049	0.047
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00047	0.00063	0.00046	0.00050	0.00049	0.00060	0.00046	0.00064	0.00053	0.00051	0.00042	0.00060	0.00039	0.00055	0.00034	0.00050	0.00054	0.00045	0.00041	0.00039
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	0.021	<0.020	0.039	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.034	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.000085	0.000097	0.00010	0.00011	0.000059	0.00011	0.000076	0.00016	0.000062	0.00012	0.000090	0.00011	0.000062	0.000098	0.000059	0.000068	0.000054	0.000057	0.000055	0.000049
Calcium (Ca)	13	13	13	14	12	12	12	13	12	12	12	12	13	13	13	13	13	13	11	12
Chromium (Cr)	0.0015	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0086	0.0083	0.0093	0.0094	0.0080	0.0086	0.0080	0.0080	0.0092	0.0085	0.0081	0.0093	0.0079	0.0086	0.0081	0.0075	0.0090	0.0091	0.0055	0.0066
Iron (Fe)	0.92	0.95	0.87	1.1	0.84	0.91	0.84	0.94	0.99	1.0	0.88	0.91	1.1	1.1	1.1	1.1	1.1	1	0.31	0.53
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.4	3.3	3.5	3.5	3.0	3.0	3.1	3.4	3.3	3.3	3.1	3.2	3.4	3.5	3.3	3.2	3.3	3.3	3.2	3.4
Manganese (Mn)	0.024	0.023	0.018	0.022	0.022	0.019	0.018	0.019	0.021	0.020	0.015	0.015	0.017	0.019	0.018	0.017	0.015	0.015	0.0089	0.0054
Molybdenum (Mo)	0.00026	0.00036	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.0010	0.00070	0.00069	0.00077	0.00072	0.00077	0.00058	0.0013	0.00071	0.00096	0.00070	0.00084	0.00070	0.0013	0.00065	0.00068	0.0011	0.00077	<0.00050	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.5	1.5	1.7	1.7	1.5	1.4	1.4	1.5	1.5	1.4	1.5	1.5	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	1.3	1.3	1.3	1.2	1.3	1.2	1.2	1.3	1.2	1.3	1.1	1.2	1.1	1.4	1.2	1.3	1.2	1.2	1.1	1.1
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.9	2.0	2.0	1.8	1.8	1.8	1.9	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0
Strontium (Sr)	0.029	0.028	0.027	0.026	0.028	0.027	0.026	0.028	0.025	0.025	0.025	0.026	0.025	0.029	0.028	0.028	0.028	0.029	0.026	0.028
Sulphur (S)	7.1	7.1	6.8	8.0	6.5	6.5	6.4	6.8	6.5	6.6	6.6	6.9	6.4	7.7	6.4	6.4	6.8	6.8	3.7	5.4
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0030	0.0020	0.0029	0.0026	0.0027	0.0022	0.0033	0.0027	0.0021	0.0036	0.0030	0.0037	0.0021	0.0018	0.0041	0.0024	0.0036	0.0042	0.0014	0.0015
Uranium (U)	<0.00010	0.00013	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.033	0.034	0.035	0.037	0.030	0.032	0.024	0.028	0.029	0.031	0.023	0.028	0.022	0.026	0.021	0.020	0.023	0.024	0.029	0.020

Table B.20. Continued. Cold Lake Station CL8 (mixing zone) - Laboratory Data

Sample Date	18-Feb-21		1-Jun-21		8-Jun-21		16-Jun-21		21-Jun-21		28-Jun-21		5-Jul-21		12-Jul-21		19-Jul-21		26-Jul-21		1-Aug-21		9-Aug-21		16-Aug-21	
Parameter/Station (depth)	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**
Dissolved Metals (mg/L)																										
Aluminum (Al)	0.050	0.045	0.058	0.059	0.051	0.062	0.055	0.056	0.062	0.061	0.046	0.049	0.046	0.044	0.040	0.038	0.041	0.045	0.037	0.037	0.034	0.035	0.042	0.038	0.045	0.047
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00074	<0.00060
Arsenic (As)	0.00056	0.00049	0.00037	0.00037	0.00044	0.00038	0.00039	0.00045	0.00040	0.00038	0.00030	0.00027	0.00041	0.00038	0.00036	0.00036	0.00047	0.00038	0.00051	0.00045	0.00041	0.00043	0.00046	0.00034	0.00043	0.00043
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	0.00014	0.00017	0.00029	0.00032	0.00028	0.00023	0.00032	0.00025	0.00016	0.00015	0.00023	0.00018	0.00017	0.00013	0.00013	0.00012	0.00010	0.000091	0.00012	0.00012	0.000099	0.000084	0.000089	0.000088	0.000070	0.000063
Calcium (Ca)	9.8	10	16	16	15	14	17	15	13	13	14	14	14	12	13	13	12	12	13	12	12	14	13	12	13	12
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	0.00034	0.00031	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0070	0.0072	0.016	0.017	0.015	0.014	0.017	0.014	0.012	0.012	0.013	0.012	0.011	0.0087	0.0089	0.0083	0.0086	0.0085	0.0090	0.0093	0.0081	0.0084	0.0071	0.0075	0.0070	0.0065
Iron (Fe)	0.27	0.30	1.5	1.6	1.4	1.0	1.4	0.99	0.75	0.73	0.97	0.81	0.75	0.51	0.57	0.58	0.46	0.47	0.50	0.55	0.40	0.51	0.49	0.49	0.50	0.43
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	2.8	2.7	3.8	3.9	3.6	3.4	4.2	3.7	3.3	3.3	3.6	3.5	3.4	3.3	3.1	3.1	3.2	3.2	3.3	3.0	3.3	3.6	3.3	3.1	3.2	3.2
Manganese (Mn)	0.023	0.019	0.065	0.067	0.039	0.028	0.027	0.012	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	0.00037	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.00074	0.00076	0.00094	0.00098	0.00068	0.00074	0.00093	0.00072	0.00059	0.00050	0.00093	0.00062	0.00072	0.00069	0.00069	0.00072	<0.00050	<0.00050	0.00069	0.00082	0.00069	0.00084	0.00059	0.00070	0.00070	0.00058
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.3	1.6	1.7	1.6	1.6	1.8	1.7	1.6	1.6	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.4	1.4	1.6	1.5	1.4	1.5	1.5
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	2.1	1.8	1.9	1.9	1.6	1.6	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.2	1.2	1.2	1.2	1.2	1.1	1.1	0.99	1.0	1.0	0.99	1.0	0.95
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.7	1.8	1.9	1.9	1.9	2.4	1.9	1.8	1.8	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.8	1.9	1.7	1.8	2.0	1.8	1.7	1.8	1.8
Strontium (Sr)	0.026	0.024	0.028	0.029	0.025	0.024	0.027	0.025	0.024	0.023	0.029	0.028	0.027	0.026	0.027	0.027	0.027	0.026	0.028	0.027	0.028	0.029	0.028	0.027	0.028	0.028
Sulphur (S)	2.1	3.1	10	11	10	8.5	13	9.5	7.7	7.8	8.9	8.0	8.5	6.6	6.8	7.1	6.6	6.7	7.1	7.8	5.9	6.8	6.5	6.7	5.9	5.6
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011
Titanium (Ti)	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	0.0018	0.0015	0.0017	0.0011	<0.0010	0.0014	0.0019	<0.0010	0.0017	0.0011	<0.0010	<0.0010	0.0012	0.0012	<0.0010	0.0013	0.0011
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.050	0.051	0.12	0.12	0.099	0.092	0.11	0.087	0.065	0.064	0.078	0.065	0.060	0.047	0.045	0.043	0.039	0.040	0.041	0.044	0.034	0.035	0.030	0.031	0.027	0.025

Table B.20. Continued. Cold Lake Station CL8 (mixing zone) - Laboratory Data

Sample Date	23-Aug-21		30-Aug-21		6-Sep-21		13-Sep-21		20-Sep-21		27-Sep-21		4-Oct-21		13-Oct-21		21-Oct-21		18-Mar-22	
Parameter/Station (depth)	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**	**CL8 (sfc)**	**CL8 (btm)**
Dissolved Metals (mg/L)																				
Aluminum (Al)	0.037	0.039	0.046	0.045	0.039	0.038	0.044	0.036	0.041	0.038	0.038	0.036	0.040	0.044	0.032	0.025	0.044	0.053	0.034	0.036
Antimony (Sb)	<0.0030	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	<0.0010	<0.0010	0.00042	0.00043	0.00051	0.00043	0.00037	0.00028	0.00043	0.00043	0.00037	0.00044	0.00045	0.00042	0.00040	0.00039	0.00038	0.00040	0.00044	0.00044
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.00010	<0.00010	0.000054	0.000061	0.000047	0.000076	0.000042	0.000072	0.000046	0.000047	0.000040	0.000041	0.000042	0.000061	0.000049	0.000038	0.000034	0.000044	0.000060	0.000058
Calcium (Ca)	13	12	14	15	13	13	14	14	13	13	12	12	12	12	15	15	13	13	11	12
Chromium (Cr)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.0015	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.0072	0.0077	0.0082	0.0083	0.0070	0.0068	0.0072	0.0071	0.0078	0.0077	0.0067	0.0065	0.0068	0.0069	0.0074	0.0069	0.0072	0.0074	0.0051	0.0062
Iron (Fe)	0.50	0.51	0.63	0.88	0.61	0.62	0.57	0.69	0.53	0.60	0.55	0.55	0.56	0.53	0.64	0.64	0.68	0.66	0.22	0.34
Lead (Pb)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	3.3	3.2	3.6	3.9	3.4	3.4	3.8	3.8	3.2	3.3	3.2	3.1	3.1	3.2	3.8	3.7	3.5	3.4	3.3	3.4
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0073	<0.0040
Molybdenum (Mo)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0026	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.0025	<0.0025	0.00073	0.00056	<0.00050	<0.00050	0.00073	0.00057	0.00073	0.00058	0.00052	<0.00050	0.00053	0.00055	<0.00050	0.00062	0.00052	<0.00050	<0.00050	0.00051
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	1.4	1.4	1.5	1.7	1.7	1.6	1.8	1.7	1.5	1.5	1.8	1.8	1.4	1.4	1.8	1.7	1.6	1.6	1.6	1.6
Selenium (Se)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	0.99	1.0	1.2	1.1	1.1	1.1	0.95	1.1	0.86	0.89	0.93	0.90	1.0	1.0	1.1	1.1	1.1	1.1	0.99	0.95
Silver (Ag)	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.9	1.8	2.1	2.1	1.9	1.9	2.1	2.1	1.8	1.8	1.9	1.9	1.9	1.9	2.3	2.2	2.1	2.1	2.3	2.1
Strontium (Sr)	0.028	0.027	0.029	0.030	0.027	0.027	0.030	0.030	0.027	0.028	0.025	0.025	0.028	0.028	0.032	0.032	0.029	0.029	0.027	0.028
Sulphur (S)	6.3	6.4	6.9	8.3	6.6	6.7	5.6	6.6	5.8	5.9	6.0	6.1	6.1	6.3	5.9	6.2	6.7	6.7	3.4	5.4
Thallium (Tl)	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0050	<0.0050	<0.0010	0.0011	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	0.0011	<0.0010	<0.0010
Uranium (U)	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.026	0.027	0.030	0.029	0.022	0.023	0.021	0.022	0.021	0.022	0.016	0.015	0.018	0.018	0.018	0.017	0.016	0.018	0.034	0.021

Table B.21. Trap and Fox Lakes - Laboratory Data

	Trap L.		Fox L.	
Parameter/Sample Date	**1-Aug-21**		**1-Aug-21**	
Physical/Chemical (mg/L)				
pH (pH units)	6.14		7.03	
Alkalinity ($CaCO_3$)	8.5		68	
Bicarbonate (HCO_3)	10		83	
Carbonate (CO_3)	<1.0		<1.0	
Hydroxide (OH)	<1.0		<1.0	
Total Hardness ($CaCO_3$)	226		177	
Hardness ($CaCO_3$)	230		180	
Turbidity (NTU)	7.5		0.48	
Total Suspended Solids (TSS)	2.1		1.1	
Dissolved Sulphate (SO_4)	240		130	
Metals (mg/L)	**Total**	**Dissolved**	**Total**	**Dissolved**
Aluminum (Al)	0.46	0.087	0.19	0.0048
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00039	0.00026	0.00028	0.00026
Barium (Ba)	0.026	0.024	0.025	0.022
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	0.020	<0.020	0.050	<0.020
Cadmium (Cd)	0.0018	0.0017	<0.000020	0.000027
Calcium (Ca)	70	71	61	63
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	0.010	0.010	<0.00030	<0.00030
Copper (Cu)	0.027	0.019	0.0012	0.0013
Iron (Fe)	1.3	0.21	<0.060	<0.060
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	12	12	5.9	5.9
Manganese (Mn)	0.48	0.42	0.0048	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	0.014	0.013	0.0016	0.00081
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10
Potassium (K)	4.6	4.6	5.3	5.5
Selenium (Se)	0.00037	0.00024	0.00022	<0.00020
Silicon (Si)	4.6	3.9	0.51	0.39
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	6.2	6.3	8.6	8.8
Strontium (Sr)	0.11	0.11	0.13	0.12
Sulphur (S)	74	72	41	41
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.0038	0.0011	0.0014	<0.0010
Uranium (U)	0.00019	<0.00010	0.00026	0.00012
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.73	0.67	0.0079	0.0033

Table B.22. 2021 QA/QC Sample Analyses - Equipment Blanks

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21
Physical/Chemical (mg/L)																					
pH (pH units)	5.40	4.62	5.02	5.13	4.67	4.67	5.09	4.50	5.04	4.79	4.71	4.75	4.77	4.78	4.79	4.76	5.01	4.72	4.71	5.16	4.81
Alkalinity ($CaCO_3$)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarbonate (HCO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbonate (CO_3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Hardness ($CaCO_3$)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hardness ($CaCO_3$)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Dissolved Hardness ($CaCO_3$)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50	--	--
Total Suspended Solids (TSS)	1.4	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.99	<0.97	<1.0	<1.0	<1.0
Dissolved Sulphate (SO_4)	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Metals (mg/L)																					
Aluminum (Al)	0.0037	0.0058	<0.0030	<0.0030	0.0056	0.0059	0.0038	0.0061	0.0040	0.027	0.0032	0.0036	0.0051	<0.0030	0.0048	<0.0030	0.0037	0.0032	<0.0030	0.0041	<0.0030
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00035	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000034	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Calcium (Ca)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.027	<0.00020	0.00022	<0.00020	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00031	0.00023	0.00030	<0.00020	<0.00020	0.00022	<0.00020	0.00034
Iron (Fe)	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Lead (Pb)	0.00071	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020
Silicon (Si)	0.41	0.19	<0.10	0.11	0.17	<0.10	0.19	0.16	0.21	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.17	<0.10	0.13	<0.10	<0.10
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium (Sr)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Sulphur (S)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	0.013	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0034	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B.22. Continued. 2021 QA/QC Sample Analyses - Equipment Blanks

Parameter/Sample Date	18-Feb-21	1-Jun-21	8-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	5-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	1-Aug-21	9-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	6-Sep-21	13-Sep-21	27-Sep-21	4-Oct-21	13-Oct-21	21-Oct-21
Dissolved Metals (mg/L)																					
Aluminum (Al)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0048	<0.0030	<0.0030	<0.0030	<0.0030	0.0050	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Calcium (Ca)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.00039	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00028	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Iron (Fe)	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00092	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.69	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium (Sr)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Sulphur (S)	<0.20	0.32	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B.23. 2021 QA/QC Sample Analyses - Trip Blanks

Parameter/Sample Date	17-Feb-21	26-May-21	08-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	05-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	01-Aug-21	09-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	06-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	04-Oct-21	13-Oct-21	21-Oct-21
Physical/Chemical (mg/L)																						
pH (pH units)	7.48	8.23	5.84	5.66	5.48	–	5.75	5.6	5.48	7.99	5.9	7.78	6.69	5.44	6.21	–	7.02	4.87	7.24	7.69	5.57	7.96
Total Hardness ($CaCO_3$)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hardness ($CaCO_3$)	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	--	<0.50	<0.50
Total Metals (mg/L)																						
Aluminum (Al)	<0.0030	0.0045	<0.0030	<0.0030	<0.0030	0.0046	0.0043	0.0053	<0.0030	<0.0030	0.0037	0.0039	0.0033	<0.0030	0.0063	<0.0030	0.0040	0.0057	0.0037	<0.0030	0.0032	<0.0030
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	0.00035	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Calcium (Ca)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	<0.00020	<0.00020	0.00028	<0.00020	<0.00020	0.00055	<0.00020	<0.00020	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	0.00035	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00034	<0.00020
Iron (Fe)	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	0.11	<0.10	<0.10	0.11	0.14	<0.10	<0.10	<0.10	<0.10	0.17	0.13	<0.10	<0.10	<0.10
Silver (Ag)	0.00016	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium (Sr)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Sulphur (S)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.29	<0.20
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	0.0002	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0049	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B.23. Continued. 2021 QA/QC Sample Analyses - Trip Blanks

Parameter/Sample Date	17-Feb-21	26-May-21	08-Jun-21	16-Jun-21	21-Jun-21	28-Jun-21	05-Jul-21	12-Jul-21	19-Jul-21	26-Jul-21	01-Aug-21	09-Aug-21	16-Aug-21	23-Aug-21	30-Aug-21	06-Sep-21	13-Sep-21	20-Sep-21	27-Sep-21	04-Oct-21	13-Oct-21	21-Oct-21
Dissolved Metals (mg/L)																						
Aluminum (Al)	<0.0030	<0.0030	<0.0030	<0.0030	0.0033	<0.0030	0.0055	<0.0030	<0.0030	<0.0030	<0.0030	0.0055	<0.0030	<0.0030	<0.0030	--	<0.0030	<0.0030	<0.0030	<0.0030	0.0051	<0.0030
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	--	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic (As)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Barium (Ba)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium (Cd)	--	--	--	--	--	--	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	--	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Calcium (Ca)	<0.30	<0.30	<0.30	<0.30	0.3	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	--	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	--	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00058	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Iron (Fe)	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	--	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium (Li)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Manganese (Mn)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	--	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Molybdenum (Mo)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	<0.00020
Nickel (Ni)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium (K)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	--	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Selenium (Se)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon (Si)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium (Sr)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Sulphur (S)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	--	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

DJRC

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 7863 TETRA TECH CANADA INC., WINNIPEG Job Number: C142581

Client Project Name & Number: SHERRIDON, MB 705-09240103-ALL

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : TOX-WEIR-20210616 Sample Matrix : Water

Description: Orange, clear Sample Number: AAA836-01

Sample Collected: Jun 16, 2021 10:25 AM Sampling Method : N/A Site Collection: N/A

Sample Collected By: ED Volume Received: 40 L Avg Temp Arrival: 13 °C Storage: 2-6°C

Sample Received: Jun 18, 2021 01:30 PM pH: 7.3 Dissolved Oxygen: 9.5 mg/L

Analysis Start : Jun 21, 2021 09:36 AM Temperature : 14 °C Sample Conductance: 138 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	15	8.1	304	9.0	0	0	0	0	0	0	0	0
6.25	15	8.1	304	9.2	0	0	0	0	0	0	0	0
12.5	15	8.1	290	9.1	0	0	0	0	0	0	0	0
25	15	8.0	274	9.2	0	0	0	0	0	0	0	0
50	14	7.8	224	9.4	0	0	0	0	0	0	0	0
100	14	7.4	142	9.5	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	7.8	310	8.0	0	0	0	0
6.25	0	0	0	0	15	8.0	306	8.9	0	0	0	0
12.5	0	0	0	0	14	8.0	292	8.9	0	0	0	0
25	0	0	0	0	14	7.9	277	8.8	0	0	0	0
50	0	0	0	0	14	7.8	230	9.0	0	0	0	0
100	0	0	0	0	14	7.4	147	9.1	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 150 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel : 10 Test Temperature : 15 ± 1 °C Solution Depth : >15 cm

Total # of Organisms Used : 59 Pre-aeration Time : 30 min. Rate of Aeration 6.5±1 mL/min/L

Test Volume : 20 L Vessel Volume : 38L Test pH Adjusted: No

Loading Density : 0.3 g/L Photoperiod : 16:8 (light: dark)

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature : 15 ± 2 °C Weight (Mean) +- SD : 0.5 ± 0.1 g Length (Mean) +- SD : 3.78 ± 0.24 cm

Culture Water Renewal : ≥ 1.0 L/min/kg fish Weight (Range) : 0.4 – 0.8 g Length (Range) : 3.40 – 4.20 cm

Culture Photoperiod : 16:8 (light: dark) % Mortality within 7 days : 0.2%

Feeding rate and frequency : daily: 1-5% biomass of trout. Acclimation Time: >14 days

Reference chemical: Phenol Test Date: Jun 16, 2021

Test Endpoint 96 hrs LC50 (95% confidence interval) : 9.32 (8.50, 10.1)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 10.2 (9.03, 11.6) mg/L Concentration : 0,8,10,12,15,20 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 7863 TETRA TECH CANADA INC., WINNIPEG Job Number: C149745

Client Project Name & Number: SHERRIDON, MB 705-09240103-ALL

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : TOX-WEIR-20210712 Sample Matrix : Water

Description: ORANGE, CLEAR Sample Number: ABR406-04

Sample Collected: Jul 12, 2021 11:55 AM Sampling Method : N/A Site Collection: N/A

Sample Collected By: JS Volume Received: 40 L Avg Temp Arrival: 9 °C Storage: 2-6°C

Sample Received: Jul 14, 2021 10:57 AM pH: 7.4 Dissolved Oxygen: 8.7 mg/L

Analysis Start : Jul 17, 2021 07:23 AM Temperature : 14 °C Sample Conductance: 132 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	16	8.2	286	8.6	0	0	0	0	0	0	0	0
6.25	15	8.3	279	8.8	0	0	0	0	0	0	0	0
12.5	15	8.3	270	8.8	0	0	0	0	0	0	0	0
25	15	8.4	249	8.7	0	0	0	0	0	0	0	0
50	15	8.1	210	8.8	0	0	0	0	0	0	0	0
100	14	7.4	133	8.7	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	288	8.9	0	0	0	0
6.25	0	0	0	0	14	7.9	279	8.9	0	0	0	0
12.5	0	0	0	0	14	7.9	272	9.0	0	0	0	0
25	0	0	0	0	14	7.9	251	9.0	0	0	0	0
50	0	0	0	0	14	7.7	214	8.8	0	0	0	0
100	0	0	0	0	14	7.3	140	8.7	0	0	0	0

Comments : The control chart result for this reference toxicant test was outside of 2SD limits. A check of all acclimation and test conditions was performed, and all requirements were met.

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 150 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	30 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.2 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.4 ± 0.1 g	Length (Mean) +- SD :	3.59 ± 0.18 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.3 – 0.5 g	Length (Range) :	3.30 – 3.90 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0.1%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Jul 20, 2021

Test Endpoint 96 hrs LC50 (95% confidence interval) : 8.30 (<8, 9.10)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 10.2 (8.84, 11.7) mg/L Concentration : 0,8,10,12,15,20 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 7863 TETRA TECH CANADA INC., WINNIPEG Job Number: C160756

Client Project Name & Number: SHERRIDON, MB 705-09240103-ALL

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : TOX-WEIR-20210816 Sample Matrix : Water

Description: Amber, clear Sample Number: AED317-01

Sample Collected: Aug 16, 2021 10:35 AM Sampling Method : N/A Site Collection: N/A

Sample Collected By: ED Volume Received: 40 L Avg Temp Arrival: 7 °C Storage: 2-6°C

Sample Received: Aug 18, 2021 03:00 PM pH: 7.1 Dissolved Oxygen: 9.1 mg/L

Analysis Start : Aug 22, 2021 08:20 AM Temperature : 14 °C Sample Conductance: 199 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.1	251	8.9	0	0	0	0	0	0	0	0
6.25	14	8.1	247	9.0	0	0	0	0	0	0	0	0
12.5	14	8.0	244	9.0	0	0	0	0	0	0	0	0
25	14	7.6	237	9.0	0	0	0	0	0	0	0	0
50	14	7.9	224	9.0	0	0	0	0	0	0	0	0
100	14	7.4	201	9.0	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	8.0	254	8.9	0	0	0	0
6.25	0	0	0	0	14	8.0	250	9.0	0	0	0	0
12.5	0	0	0	0	14	7.8	247	8.9	0	0	0	0
25	0	0	0	0	14	7.8	240	9.0	0	0	0	0
50	0	0	0	0	14	7.7	227	8.9	0	0	0	0
100	0	0	0	0	14	6.6	202	9.0	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	30 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.3 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.5 ± 0.1 g	Length (Mean) +- SD :	3.83 ± 0.31 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.3 – 0.6 g	Length (Range) :	3.10 – 4.20 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Aug 14, 2021

Test Endpoint 96 hrs LC50 (95% confidence interval) : 9.32 (8.50, 10.1)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 10.1 (8.81, 11.5) mg/L Concentration : 0,8,10,12,15,20 mg/L

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 7863 TETRA TECH CANADA INC., WINNIPEG Job Number: C166633

Client Project Name & Number: SHERRIDON, MB 705-09240103-ALL

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : TOX-WEIR-20210906 Sample Matrix : Water

Description: Orange, clear Sample Number: AFL640-01

Sample Collected: Sep 06, 2021 11:20 AM Sampling Method : N/A Site Collection: N/A

Sample Collected By: MR Volume Received: 40 L Avg Temp Arrival: 10 °C Storage: 2-6°C

Sample Received: Sep 08, 2021 02:45 PM pH: 7.7 Dissolved Oxygen: 9.2 mg/L

Analysis Start : Sep 10, 2021 08:00 AM Temperature : 14 °C Sample Conductance: 231 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	15	8.1	270	9.0	0	0	0	0	0	0	0	0
6.25	15	8.1	267	9.0	0	0	0	0	0	0	0	0
12.5	15	8.1	267	8.9	0	0	0	0	0	0	0	0
25	15	8.0	264	8.9	0	0	0	0	0	0	0	0
50	15	7.9	255	9.0	0	0	0	0	0	0	0	0
100	14	7.5	235	9.3	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	15	8.0	272	8.8	0	0	0	0
6.25	0	0	0	0	15	7.9	272	8.8	0	0	0	0
12.5	0	0	0	0	15	7.8	271	8.6	0	0	0	0
25	0	0	0	0	16	7.9	269	8.7	0	0	0	0
50	0	0	0	0	16	7.8	264	8.7	0	0	0	0
100	0	0	0	0	16	7.5	250	8.7	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	30 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.2 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : In House Culture

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.4 ± 0.1 g	Length (Mean) +- SD :	3.49 ± 0.22 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.2 – 0.5 g	Length (Range) :	3.00 – 3.80 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0.1%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Sep 07, 2021

Test Endpoint 96 hrs LC50 (95% confidence interval) : 9.99 (9.10, 10.8)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 9.98 (8.78, 11.3) mg/L Concentration : 0,8,10,12,15,20 mg/L

DJRC

RESULTS OF RAINBOW TROUT LC50 MULTI-CONCENTRATION

Client : 7863 TETRA TECH CANADA INC., WINNIPEG Job Number: C175755

Client Project Name & Number: SHERRIDON, MB 705-09240103-ALL

Test Result:

96 hrs LC50 % vol/vol (95% CL): >100% (N/A) Statistical Method: Visual

Sample Name : TOX-WEIR-20211004 Sample Matrix : Water

Description: Orange, hazy Sample Number: AHP399-01

Sample Collected: Oct 04, 2021 10:42 AM Sampling Method : N/A Site Collection: N/A

Sample Collected By: ED Volume Received: 40 L Avg Temp Arrival: 6 °C Storage: 2-6°C

Sample Received: Oct 06, 2021 02:10 PM pH: 7.0 Dissolved Oxygen: 9.5 mg/L

Analysis Start : Oct 08, 2021 08:20 AM Temperature : 14 °C Sample Conductance: 286 µS/cm

Concentration	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	Start	Start	Start	Start	24 hrs	24 hrs	24 hrs	24 hrs	48 hrs	48 hrs	48 hrs	48 hrs
0	14	8.0	278	9.0	0	0	0	0	0	0	0	0
6.25	14	8.1	278	9.1	0	0	0	0	0	0	0	0
12.5	14	8.0	279	9.2	0	0	0	0	0	0	0	0
25	14	8.0	280	9.3	0	0	0	0	0	0	0	0
50	14	7.8	283	9.3	0	0	0	0	0	0	0	0
100	14	7.4	289	9.4	0	0	0	0	0	0	0	0

Concentration	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)	Temperature (°C)	pH (pH)	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Mortality (#)	Mortality (%)	Atypical Behaviour (#)	Atypical Behaviour (%)
% vol/vol	72 hrs	72 hrs	72 hrs	72 hrs	96 hrs	96 hr	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs	96 hrs
0	0	0	0	0	14	7.9	276	8.7	0	0	0	0
6.25	0	0	0	0	14	7.9	276	9.0	0	0	0	0
12.5	0	0	0	0	14	7.9	280	9.2	0	0	0	0
25	0	0	0	0	14	7.9	280	9.4	0	0	0	0
50	0	0	0	0	14	7.7	283	9.2	0	0	0	0
100	0	0	0	0	14	7.2	292	9.4	0	0	0	0

Comments : None

Culture/Control/Dilution Water City of Edmonton dechlorinated tap water

Hardness: 140 mg/L $CaCO_3$ Other parameters available on request.

Test Conditions Test concentration : 0,6.25,12.5,25,50,100 (% vol/vol)

Organisms per Vessel :	10	Test Temperature :	15 ± 1 °C	Solution Depth :	>15 cm
Total # of Organisms Used :	60	Pre-aeration Time :	30 min.	Rate of Aeration	6.5±1 mL/min/L
Test Volume :	20 L	Vessel Volume :	38L	Test pH Adjusted:	No
Loading Density :	0.4 g/L	Photoperiod :	16:8 (light: dark)		

Test Organism : Rainbow Trout *(Oncorhynchus mykiss)* Source : Spring Valley Trout Hatchery

Culture Temperature :	15 ± 2 °C	Weight (Mean) +- SD :	0.7 ± 0.2 g	Length (Mean) +- SD :	4.23 ± 0.42 cm
Culture Water Renewal :	≥ 1.0 L/min/kg fish	Weight (Range) :	0.4 – 1.0 g	Length (Range) :	3.60 – 4.80 cm
Culture Photoperiod :	16:8 (light: dark)			% Mortality within 7 days :	0.2%
Feeding rate and frequency :	daily: 1-5% biomass of trout.			Acclimation Time:	>14 days

Reference chemical: Phenol Test Date: Sep 07, 2021

Test Endpoint 96 hrs LC50 (95% confidence interval) : 9.99 (9.10, 10.8)mg/L Statistical Method : Probit

Historical Mean LC50 (warning limits) : 9.98 (8.78, 11.3) mg/L Concentration : 0,8,10,12,15,20 mg/L

Bureau Veritas Laboratories 9331 - 48th Street, Edmonton, Alberta T6B 2R4 Tel: (780) 577-7100 Fax: (780) 450-4187 www.bvna.com