

Veolia Waste Services Alberta Inc.

Environmental Monitoring Program

Swan Hills, AB

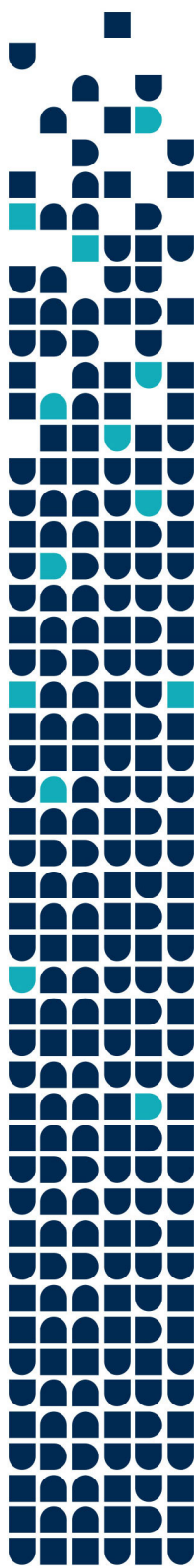
Technical Report

2025 Surface Water Quality Monitoring

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FINAL



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Executive summary

The Swan Hills Treatment Centre (SHTC) operates under *Environmental Protection and Enhancement Act* (EPEA) Approval No. 1744-03-00 and is subject to an ongoing, long-term environmental monitoring program designed to detect potential facility-related effects on the surrounding receiving environment. The 2025 surface water monitoring program was completed by CPP Environmental, a member of BBA, and included annual sampling at three (3) established locations: Chrystina Lake (S12) and the Coutts River (S5A)—both designated as downgradient exposure sites—and Edith Lake, the regional upgradient reference site. Sediment monitoring was not conducted in 2025 in accordance with the biennial schedule.

Overall, surface water quality in 2025 was consistent with long-term historical conditions and comparable to results from the 2024 program. Most routine chemistry, nutrient, and metal parameters met the Alberta Surface Water Quality Guidelines for the Protection of Aquatic Life (PAL). As in previous years, pH and total alkalinity at Edith Lake fell below guideline minimums; however, these results continue to reflect the naturally acidic conditions of peatland-influenced waters rather than anthropogenic effects. At S5A, dissolved iron and total cobalt exceeded PAL guidelines, consistent with past monitoring years and are likely reflective of naturally elevated metal concentrations commonly observed during low-flow autumn conditions. No guideline exceedances were recorded at Chrystina Lake.

Several routine and metal parameters exceeded their respective 95th percentiles of historical values, particularly at Chrystina Lake, where elevated alkalinity, hardness, total dissolved solids (TDS), and multiple dissolved ions were again documented. These exceedances mirror patterns observed in 2024 and are likely attributable to natural hydrologic variability, including the limited inflow, small watershed area, and susceptibility to evaporative concentration at S12. Similar exceedances in major ions at S5A (e.g., alkalinity, bicarbonate, dissolved magnesium) were also consistent with low autumn flow conditions. In contrast, Edith Lake remained stable, with only hardness exceeding the 95th percentile, reaffirming its role as an appropriate reference station.

Trend analysis using a 10-year moving window identified statistically significant trends for several parameters. At Chrystina Lake, upward trends in alkalinity, bicarbonate, TDS, sodium, and dissolved potassium, and a continued decreasing trend in pH, were consistent with results from 2024 and likely reflect natural geochemical and hydrological processes. At the reference site, Edith Lake, increasing trends in alkalinity, bicarbonate, and TKN, and decreasing trends in aluminum, silicon, and sulphur, were again observed and remain consistent with its natural watershed characteristics. At S5A, increasing trends in arsenic, iron, silicon, magnesium, and sodium were detected but remained within historical ranges and below PAL guideline thresholds, indicating no new or emerging concerns.

Taken together, the 2025 monitoring results demonstrate that surface water quality in the receiving environment surrounding the SHTC remains stable and within the bounds of natural regional variability. Observed exceedances, historical highs, and trends are consistent with site-specific hydrologic and geochemical conditions rather than changes in facility emissions or operations. The program continues to provide strong evidence that SHTC activities are not causing measurable adverse effects on regional surface water quality. The existing monitoring framework—including annual surface water sampling and biennial sediment sampling—remains appropriate for detecting environmental change and ensuring continued protection of aquatic life in the region.

Table i: 2025 surface water quality summary, including historically high values in 2025, regulatory guideline exceedances (Government of Alberta, 2018), and significant ($\alpha = 0.1$) water quality trends over 10 years for each of three (3) monitoring sites.

Parameter	Above Historical Range			Exceeding Regulatory Guidelines			Mann-Kendall Trends		
	Chrystina Lake	Edith Lake	Coufts River	Chrystina Lake	Edith Lake	Coufts River	Chrystina Lake	Edith Lake	Coufts River
Routine parameters and major ions									
Alkalinity (total as CaCO_3)	Above	-	Above	-	Below minimum	-	Up	Up	Up
Electrical conductivity	Above	-	-	-	-	-	NT	NT	Up
Hardness	Above	Above	-	-	-	-	NT	NT	NT
Bicarbonate	Above	-	Above	-	-	-	Up	Up	Up
pH	-	-	-	-	Below minimum	-	Down	NT	NT
Sodium (total)	-	-	-	-	-	-	Up	NT	Up
Calcium (total)	Above	-	-	-	-	-	NT	NT	NT
Calcium (dissolved)	Above	-	-	-	-	-	NT	NT	NT
Total dissolved solids (TDS)	Above	-	-	-	-	-	Up	NT	NT
Nutrients									
Total Kjeldahl Nitrogen	Above	-	-	-	-	-	NT	Up	NT

Parameter	Above Historical Range			Exceeding Regulatory Guidelines			Mann-Kendall Trends		
	Chrystina Lake	Edith Lake	Coufts River	Chrystina Lake	Edith Lake	Coufts River	Chrystina Lake	Edith Lake	Coufts River
Total Metals									
Barium (total)	Above	-	-	-	-	-	Up	NT	NT
Copper (total)	-	-	-	-	-	-	NT	Up	NT
Potassium (total)	Above	-	-	-	-	-	NT	NT	NT
Cobalt (total)	-	-	-	-	-	Above chronic	-	-	-
Silicon (total)	-	-	Above	-	-	-	NT	Down	Up
Strontium (total)	Above	-	-	-	-	-	Up	-	NT
Aluminum (total)	-	-	-	-	-	-	NT	Down	NT
Arsenic (total)	-	-	-	-	-	-	NT	NT	Up
Iron (total)	-	-	-	-	-	-	NT	NT	Up
Magnesium (total)	-	-	-	-	-	-	NT	NT	Up
Sulphur (total)	-	-	-	-	-	-	-	Down	NT
Dissolved Metals									
Iron (dissolved)	-	-	-	-	-	Above chronic	-	NT	NT
Potassium (dissolved)	Above	-	-	-	-	-	Up	NT	NT
Magnesium (dissolved)	Above	-	Above	-	-	-	NT	NT	NT
Manganese (dissolved)	-	-	Above	-	-	-	-	NT	NT

Acronyms and Abbreviations

Term	Definition
Ag	Silver
Al	Aluminum
As	Arsenic
B	Boron
Ba	Barium
Be	Beryllium
Ca	Calcium
Ca ²⁺	Dissolved calcium
CaCO ₃	Calcium carbonate
Cd	Cadmium
Cl ⁻	Chloride
Co	Cobalt
CO ₃ ²⁻	Carbonate
Cr	Chromium
Cu	Copper
EC	Electrical conductivity
EPEA	Environmental Protection and Enhancement Act
Fe	Iron
Fe ²⁺	Dissolved iron
HCO ₃ ⁻	Bicarbonate
Hg	Mercury
K	Potassium
K ⁺	Dissolved potassium
Li	Lithium
M-K	Mann Kendall test
MDL	Method detection limit
Mg	Magnesium
Mg ²⁺	Dissolved magnesium
Mn	Manganese
Mn ²⁺	Dissolved manganese

Term	Definition
Mo	Molybdenum
N	Nitrogen
Na	Sodium
Na ⁺	Dissolved sodium
Ni	Nickel
OH ⁻	Hydroxide
P	Phosphorus
PAL	Protection of aquatic life
Pb	Lead
QA/QC	Quality assurance and quality control
RDL	Reportable detection limit
RPD	Relative percent difference
S	Sulphur
Sb	Antimony
Se	Selenium
Si	Silicon
SHTC	Swan Hills Treatment Centre
Sn	Tin
SO ₄ ²⁻	Sulphate
Sr	Strontium
TDS	Total dissolved solids
Ti	Titanium
TKN	Total Kjeldahl nitrogen
Tl	Thallium
TOC	Total organic carbon
TSS	Total suspended solids
U	Uranium
V	Vanadium
Zn	Zinc

Units

Term	Definition
%	Percent
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
cm	Centimetre
cms	Cubic metres per second
km ²	Square kilometre
km	Kilometre
m	Metre
mg/L	Milligrams per litre
mm	Millimetre
mm/hr	Millimetres per hour

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APPENDICES

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1. Introduction

The Swan Hills Treatment Centre (SHTC) is a hazardous waste management facility owned by the Government of Alberta and operated by Veolia Waste Services Alberta Inc. The facility is located approximately 13.5 km northeast of the Town of Swan Hills, Alberta within the legal land description W½ 06-067-08 W5M (Figure 1-1) and lies within the Upper Foothills Natural Subregion of the Athabasca River watershed. The surrounding landscape supports a range of anthropogenic activities, including oil and gas development, forestry operations, and recreational land use.

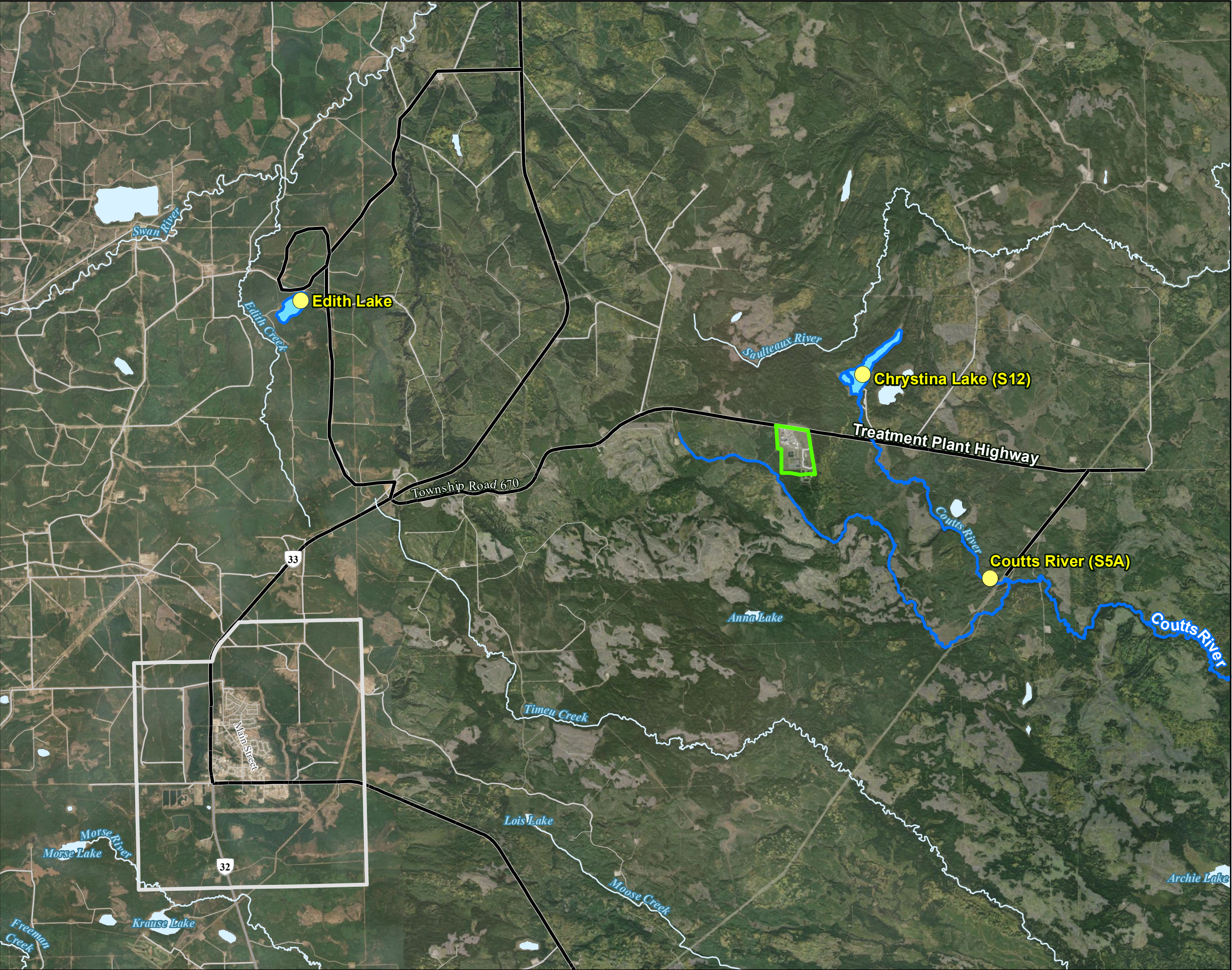
Since commencing operations in 1987, the SHTC has safely treated and disposed of more than 500,000 tonnes of hazardous waste in accordance with applicable regulations and authorizations. Waste treatment is conducted primarily through incineration, with atmospheric emissions representing the principal pathway by which facility-related constituents may be transported to the surrounding environment.

The SHTC operates under Environmental Protection and Enhancement Act (EPEA) Approval No. 1744-03-00. Environmental monitoring activities were initiated in 1985, two years prior to facility commissioning, to establish baseline environmental conditions. This baseline data supported the development of an operational-phase environmental monitoring program, which has since evolved into a comprehensive, long-term monitoring framework. The program includes surface water and sediment quality monitoring within the adjacent receiving environment to provide early detection of potential effects associated with the atmospheric deposition of facility-related constituents.

The overarching objective of the environmental monitoring program is to track temporal changes in environmental conditions and to ensure that any potential effects attributable to SHTC operations are identified and addressed in a timely manner. Surface water quality monitoring is conducted annually, while sediment quality monitoring is conducted on a biennial basis.

This report documents the surface water quality monitoring program conducted by BBA (formerly CPP Environmental) in 2025. Sediment quality monitoring was not undertaken during the 2025 monitoring year. Specifically, this report addresses the following objectives:

- Evaluate the potential exposure of aquatic organisms to organic and inorganic constituents via surface water, through comparison with applicable guidelines and evaluation of upgradient and downgradient monitoring locations; and
- Assess whether SHTC operations have resulted in changes in surface water quality, using trend analysis and comparison of current results to historical data ranges.



2025 Surface Water and
Sediment Quality Monitoring

Figure 1-1: Project Location

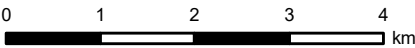
- Sampling Station
- Coutts River
- Sampling Station Access Road
- Study Lake
- Town of Swan Hills
- Swan Hills Treatment Center
- FWMIS Waterbody
- Highway
- Arterials
- Local



Source: Contains information licensed under the
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Imagery Acquisition Date: 2023
Coordinate System: NAD 1983 UTM Zone 11N



1:80,000



Date: March 3, 2026
Prepared by: S. Farrugia



2. Methods

2.1 Program design

The scope of the water and sediment quality monitoring program has varied over time. The current program focuses on conditions in late summer to early fall for two reasons:

1. to reduce the influence of flow on water chemistry; and
2. to capture sediments deposited during the summer season.

In 2025, surface water sampling was conducted on October 10th at three (3) established locations: Coutts River (Station S5A), Chrystina Lake (Station S12), and Edith Lake (Figure 1-1; Table 2-1). Stream flow measurements were attempted at Coutts River (Station S5A); however, flow velocities were too low to be measurable. Sediment sampling was not conducted in 2025.

Chrystina Lake and Station S5A have historically been designated as exposure (i.e., test) sites, as they are located downgradient and downwind of the SHTC. Edith Lake has been designated as the reference (i.e., control) site based on its location upgradient and upwind of the facility.

Chrystina Lake (Station S12) is located approximately 1.5 km northeast of the SHTC and is accessed via a gravel road spur off Highway 33 leading to the facility. The lake has no major inflowing streams, and its outflow to the Coutts River is regulated by a flow control structure. Chrystina Lake has a surface area of 0.49 km², a watershed area of 1.6 km², a maximum depth of 10 m, and a mean depth of 3.2 m. Surface water monitoring at Chrystina Lake has been conducted since 1991.

Station S5A is situated on the Coutts River approximately 5 km southeast and downwind of the SHTC. The Coutts River originates at Chrystina Lake and flows generally southeast before curving northward and ultimately discharging into the Saulteaux River. Station S5A replaced the original Station S5 in 2012 due to persistent flooding caused by beaver dam activity. Monitoring of the Coutts River has been ongoing since 1985.

Edith Lake is located approximately 15 km west and upwind of the SHTC and is accessed via a dirt road spur off Highway 33 north of the Town of Swan Hills. The lake has no major inflows or outflows and serves as a reference waterbody for regional background conditions. Edith Lake has a surface area of 0.26 km², a watershed area of 0.83 km², a maximum depth of 6.3 m, and a mean depth of 2.6 m. Prior to 1998, Victor Lake was used as the reference site; however, due to access constraints, Edith Lake replaced Victor Lake beginning in 1998.

Table 2-1: Summary of 2025 monitoring effort.

Station ID	Station Name	Water Quality	Sediment Quality	Discharge	Location	
					Latitude	Longitude
S5A	Coutts River	✓	-	✓*	54.74551°	115.15205°
S12	Chrystina Lake	✓	-	-	54.78587°	115.19350°
Edith	Edith Lake	✓	-	-	54.80043°	115.38441°

* Flow at Coutts River was minimal

2.2 Hydrology

Water quality parameters in streams can be affected by the flow rate (Aroner, 2011). Stream flow measurement was attempted at S5A on October 10th, 2025; however, flow velocities were too low to be measurable. Instead, a hydrograph of the Swan River near the Town of Swan Hills was generated using the Alberta River Basins online mapping tool and dataset (Government of Alberta, 2026) to provide regional context regarding changes in local small rivers in 2025, including Coutts River.

2.3 Surface water quality

Surface water sampling was conducted in accordance with established aquatic field sampling protocols (Canadian Council of Ministers of the Environment, 2011) as follows:

- Water samples were collected 30 cm below water surface into bottles supplied by Bureau Veritas Laboratories. Bottles were triple rinsed with sample water prior to collection (only when no preservative was in the bottle) and samples were stored on ice in coolers and transported to Bureau Veritas Laboratories in Edmonton for routine, nutrient and metal analyses. A list of the water quality parameters measured is presented in Table 2-2.
- Stream samples were collected from the Coutts River near shore in flowing water, approximately 50 m upstream of the access road.
- Lake samples were collected by boat at the deepest location of each lake.
- In situ* water quality could not be measured due to a malfunction of the multiparameter water quality probe available at the time of sampling.

Table 2-2: Surface water analytical parameters.

Parameters	
Routine/Ionic Chemistry	
Total dissolved solids (TDS)	Total suspended solids (TSS)
pH	Electrical conductivity (EC)
Total alkalinity	Hydroxide
Hardness	Carbonate
Bicarbonate	Sulphate
Chloride	
Nutrients	
Total phosphorus	Total Kjeldahl nitrogen (TKN)
Nitrate	Nitrite
Total ammonia	
Carbon	
Total organic carbon (TOC)	
Biological	
Chlorophyll a	
Total Metals	
Aluminum	Antimony
Arsenic	Barium
Beryllium	Boron
Cadmium	Calcium
Chromium	Cobalt
Copper	Iron
Lead	Lithium
Magnesium	Manganese
Mercury	Molybdenum
Nickel	Potassium
Selenium	Silicon
Silver	Sodium
Strontium	Sulphur
Thallium	Tin

Parameters	
Titanium	Uranium
Vanadium	Zinc
Dissolved Metals	
Calcium	Iron
Magnesium	Manganese
Potassium	Sodium

2.4 Quality assurance and quality control

Standard quality assurance and quality control (QA/QC) measures (Alberta Environment, 2006; Canadian Council of Ministers of the Environment, 2011) were employed during the 2025 monitoring campaign including the following:

- A field duplicate water sample was taken from Edith Lake which was used to compare results from two (2) samples from the same site to determine the variability in field protocols and laboratory tests. If results from the two samples were similar, then sampling techniques were consistent from one sampling event to the next. The duplicate sample was sent to Bureau Veritas Laboratories for routine, nutrient, and metal analysis along with the original samples.
- A field blank was prepared in the field using laboratory-supplied deionized water. This field blank was used to determine if contamination occurred during field sampling since results should be undetectable across the board. The field blank was sent to Bureau Veritas Laboratories for routine, nutrient, and metal analysis.
- A trip blank was prepared by Bureau Veritas Laboratories and travelled with the sample bottles from the laboratory to the sample site and then back to the lab without being opened. Trip blanks indicate contamination within the bottle or from volatile compounds (Alberta Environment, 2006). The trip blank was analyzed by Bureau Veritas Laboratories for anion, nutrient, and metal concentrations.

Field QA/QC samples represented a minimum of 10% of the total number of samples. Standard laboratory QA/QC procedures were completed by Bureau Veritas.

2.5 Data analysis

The analysis of water quality data involved summarizing and comparing values against applicable water quality guidelines as well as assessing long-term trends in constituent concentrations. Other methods typically employed to determine the effects of pollution on the environment are not suitable for the assessment of the monitoring program's data record. For example, a "Before and After" study design can be used where pre- and post- operations data exist, or a "Reference Condition Approach" can be used when a group of reference sites is used as a comparison point to "test" sites. The current program's dataset consists of two (2) years of pre-operational data (1985-1987) at one site (Coutts River; Station S5A). This pre-operational data is difficult to compare to post-operational data since the methods employed, and parameters measured have changed over time. In addition, two (2) years of pre-operational data at one (1) site are insufficient to create a statistically representative sample group against which to compare effects.

2.5.1 Screening

Prior to analysis, the 2025 surface water quality data were combined with historical data spanning 1985 to 2024. Variables containing more than 50% of censored results (i.e., values were below the Method Detection Limit, or MDL) were excluded from the subsequent trend analysis. For variables where less than 50% of results were censored, the censored data were substituted with $\frac{1}{2}$ of the MDL to facilitate the calculation of summary statistics. If the data had multiple MDLs, all the censored data were substituted with $\frac{1}{2}$ of the highest MDL to remain conservative and prevent the detection of false trends. Finally, variables that were analyzed in fewer than 50% of samples were also excluded from trend analysis.

2.5.2 Summary statistics

Summary statistics were calculated for historical data spanning 1985 to 2024, including the 5th, 10th, 25th, 50th (median), 75th, 90th, and 95th percentiles for each variable. If more than 50% of the dataset was censored, summary statistics were not calculated for that variable. Additionally, summary statistics were only calculated for variables that met a minimum sample size criterion of 10 observation years (inclusive of 2025, or 8 years if all values were not censored). 2025 water quality values that were higher than the respective 95th percentile of historical values were flagged and discussed in the context of water quality guidelines and trend analysis.

2.5.3 Water quality guidelines

To evaluate the potential exposure of aquatic organisms to organic and inorganic constituents, water quality data were compared to the Alberta surface water quality guidelines (Government of Alberta, 2018) for the protection of aquatic life (PAL). Any exceedances were described and put into regional and historical context.

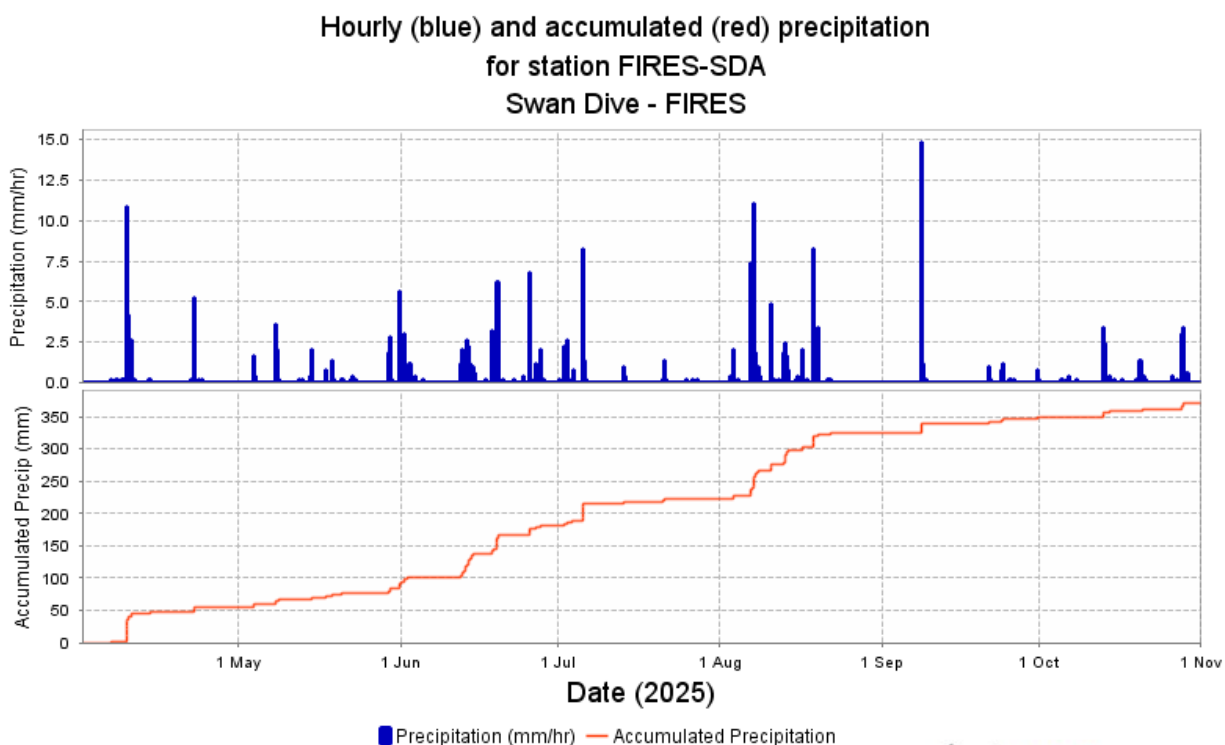
2.5.4 Trend analysis

To determine if there were changes in constituents over time, non-parametric trend analysis was conducted on variables with eight or more years of data available, as per Aroner (2011). The Mann-Kendall (M-K) test was used on late summer/fall data, representing low flow conditions, using the statistical software R v. 4.1.3 (R Core Team, 2021) and the “trend” analysis package v. 1.1.6 (Pohlert, 2023). A “moving window” method was used in 2025, wherein only the 10 most recent observations of a variable were included in the trend analysis (rather than the entire data record). The moving window approach constrains the analysis to current conditions and trends, rather than historic values that would likely skew the analysis results. Shaded regions on the trend plots indicate the 5-95th percentile range based on the moving window data subset rather than the 95th percentiles calculated using the entire variable's data record (as described above). This was done to prevent excessive scaling of the vertical axes to accommodate historically high values that would render the plots illegible. For each site, the significance of trends over time (increasing or decreasing; assessed at 90% significance level) was calculated for each water quality variable and plotted with the estimated Sen's slope (see Appendix A).

3. Results

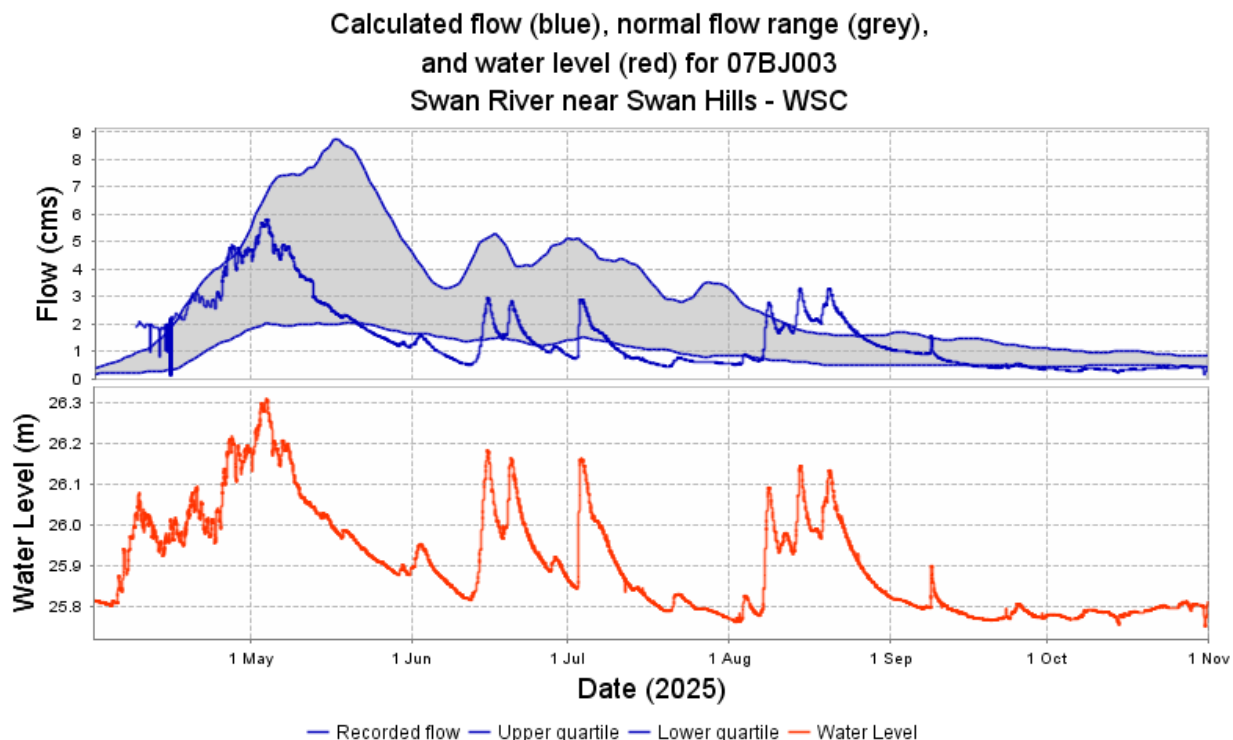
3.1 Hydrology

There appeared to be a delay between peak rainfall and peak discharge for spring freshet (Figure 3-1 and Figure 3-2). In addition to high flow during spring freshet, instances with high relative flow occurred throughout Late June-early July as well as August (Figure 3-2). Flow was generally low for the remainder of the recording period with the lowest values recorded in October. It is expected that the monitored waterbodies of interest (e.g., the Coutts River) had similar hydrological patterns during 2025.



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Figure 3-1: Precipitation at Swan Hills in 2025 (April-November) hourly and accumulated precipitation (Government of Alberta, 2026).



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Figure 3-2: Hydrograph for Swan River near Swan Hills for 2025 (April-November) showing daily flow and water levels (Government of Alberta, 2026).

3.2 Surface water quality

3.2.1 Quality assurance and quality control

An examination of the field and trip blank laboratory results (Appendix B) indicates that all the tested parameters in those samples were below the respective detection limits in the field blank; however, the concentration of total aluminum in the trip blank was marginally higher ($3.7 \mu\text{g/L}$) than the respective detection limit ($3 \mu\text{g/L}$). This indicates potential contamination introduced during the preparation of the trip blank by the laboratory or during the analysis itself. It is unlikely that the contamination was introduced during sample handling or transport since there were no detectable parameters in the field blank.

The duplicate water sample collected at Edith Lake had comparable—if not identical—values for most assessed parameters relative to the original sample (Appendix B). Relative percent difference (RPD) analysis revealed no parameters with RPD values of greater than 20% among the two (2) duplicate samples. The parameter with the highest RPD value (17.8%) was total alkalinity (11 vs. 9.2 mg/L) followed by bicarbonate (16.7%; 13 vs. 11 mg/L). Comparison of the two (2) duplicate samples indicates very consistent results.

3.2.2 Water quality guidelines comparison

3.2.2.1 Routine and nutrients

The following routine and nutrient parameters and analytes did not meet the relevant surface water quality PAL guidelines (where applicable) in 2025 (Table 3-1):

- Edith Lake (reference site):
 - Total alkalinity (as CaCO_3); and
 - pH (was below the minimum guideline).

These results were consistent with the results of the 2024 surface water quality monitoring program (CPP Environmental, 2025). Total alkalinity was measured as being below the minimum water quality guideline at Edith Lake; however, the provincial guidelines indicate that the 20 mg/L guideline does not apply if natural conditions are less than this. These results align with the fact that Edith Lake is surrounded by peatlands, which are naturally acidic.

Examining results from the 11 lakes sampled for routine analysis across the region in 2024, it was evident that pH varied broadly across sites (average summer pH from 5.45 to 8.02) (CPP Environmental, 2025). pH at the additional lakes sampled in 2024 was consistent with those of Edith Lake and Christina Lake. CPP Environmental (2025) concluded that there was a relationship between pH and the size of the watershed. Lakes with smaller watersheds would have a water balance that is more driven by atmospheric input of water (rain, snow), which has lower pH, than lakes with larger contributing areas.

Beyond the alkalinity and pH results at Edith Lake, all remaining routine parameters measured in 2025 were well within provincial PAL guideline values, and in many cases, concentrations were low relative to both guideline thresholds and long-term historical ranges (Section 3.2.3). Electrical conductivity, hardness, TDS, chloride, and sulphate remained low across all three (3) monitoring sites, reflecting generally dilute water chemistry characteristic of northern Alberta lakes and streams. This aligns with observations from the 2024 monitoring program, where routine

parameters showed minimal evidence of stress relative to guideline values, and reinforces the interpretation that the receiving environment remains chemically stable from a regulatory perspective. Although several routine parameters at Chrystina Lake and S5A were elevated relative to their historical 95th percentiles, none of these elevated values corresponded to guideline exceedances, further indicating that observed variability is within the bounds of natural geochemical fluctuation rather than representing a compliance concern.

For nutrient parameters, all measured concentrations in 2025 met the applicable PAL guidelines, though interpretation was limited by the presence of non-detects, especially for nitrate, nitrite, and ammonia. As in 2024, nitrate and nitrite were below analytical detection limits at all sites, which complicates direct comparison to guideline thresholds that are themselves below or near the detection limits. Nonetheless, the absence of detectable inorganic nitrogen across all stations is consistent with historically low nutrient conditions in these systems and suggests that nutrient loading pressures remain minimal. Total phosphorus concentrations were likewise low and within expected ranges for the region. Taken together, the 2025 nutrient results show no indication of eutrophication pressure or nutrient enrichment at either test or reference locations and continue the long-term pattern of nutrient stability documented in prior years.

3.2.2.2 Metals

The following metal parameters exceeded their respective surface water quality PAL guidelines (where applicable) in 2025 (Table 3-1):

- S5A (Coutts River):
 - Total cobalt; and
 - Dissolved iron.

Total mercury concentrations in water at each site were as follows:

- Chrystina Lake: <0.0019 µg/L
- Edith Lake: <0.0019 µg/L
- S5A (Coutts River): 0.0019 µg/L

Across all three (3) monitoring stations, most metal concentrations measured in 2025 were well below the applicable PAL guideline values, and only two parameters exceeded guideline thresholds: dissolved iron and total cobalt, both at S5A (Coutts River). As noted previously, dissolved iron exceedances at this location are not atypical for the region (CPP Environmental, 2025), and the 2025 concentration remains within the long-term historical range, consistent with

elevated natural iron levels associated with local geology. Similarly, the cobalt exceedance at S5A reflects a concentration that is still well below the 95th percentile of historical values (see Section 3.2.3) and therefore does not suggest a new or emerging anthropogenic input. For both metals, exceedances are likely driven by low-flow seasonal conditions that reduce dilution capacity in October, a pattern also documented in the 2024 assessment. No guideline exceedances were recorded at Chrystina Lake or Edith Lake, and all trace metal concentrations at the reference lake remained below guideline levels and consistent with historical background conditions.

The broader metals dataset for 2025 aligns closely with results from recent monitoring years, particularly 2024, in which exceedances were limited, isolated, and consistent with naturally elevated regional metal concentrations. For the majority of metals—including arsenic, cadmium, chromium, nickel, mercury, lead, selenium, and zinc—2025 concentrations were low, often near or below analytical detection limits, and therefore far below PAL chronic or acute thresholds. Even at Chrystina Lake, where several major ion metals exceeded their historical 95th percentiles (see Section 3.2.3), none approached guideline levels. These results reinforce the conclusion that, from a regulatory compliance standpoint, metal concentrations in 2025 do not indicate adverse changes to surface water quality and remain reflective of the region's natural geochemical baseline rather than facility-related effects.

Table 3-1: Analytes and parameters measured in water samples in 2025 as compared to the Alberta Surface Water Quality Guidelines for the Protection of Aquatic Life (Government of Alberta, 2018).

Parameter	Units	Sampling Station			AB Surface Water Quality PAL Guidelines	
		S12 (Chrystina Lake)	Edith Lake	S5A (Coufts River)	Chronic (long-term)	Acute (short-term)
Routine Parameters						
Alkalinity, total (as CaCO ₃)	mg/L	23	9.2	75	20 ¹	-
Hydroxide (OH ⁻)	mg/L	<1	<1	<1	-	-
Bicarbonate (HCO ₃ ⁻)	mg/L	28	11	91	-	-
Carbonate (CO ₃ ²⁻)	mg/L	<1	<1	<1	-	-
Hardness (as CaCO ₃)	mg/L	22	9.4	66	-	-
Total Dissolved Solids (TDS)	mg/L	24	12	85	-	-
Total Suspended Solids (TSS)	mg/L	4.7	1.1	<1.0	Varies ²	Varies ²
pH	pH units	6.98	6.37	7.14	6.5-9 ³	-
Electrical Conductivity (EC)	µS/cm	48	25	140	-	-
Sulphate (SO ₄ ²⁻)	mg/L	<1	<1	<1	128-218 ⁴	-
Chloride (Cl ⁻)	mg/L	<1	<1	6.5	120	640
Nutrients						
Nitrate (as N)	mg/L	<0.040	<0.040	<0.040	3	124
Nitrite (as N)	mg/L	<0.040	<0.040	<0.040	0.02-0.08 ⁵	0.06-0.24 ⁵
Ammonia, total (as N)	mg/L	0.15	0.015	0.015	6.11-35.93 ⁶	-
Phosphorus, total (as P)	mg/L	0.012	0.018	0.05	Varies ⁷	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.88	0.67	0.49	-	-
Total Organic Carbon (TOC)	mg/L	8.2	12	17	-	-
Biological						
Chlorophyll a	µg/L	5.6	7.9	1.9	-	-
Total Metals						
Aluminum (Al)	mg/L	0.0082	0.031	0.052	-	-
Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	-	-
Arsenic (As)	mg/L	0.0006	0.00053	0.0015	0.005	-
Barium (Ba)	mg/L	0.042	0.02	0.051	-	-
Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	-	-
Boron (B)	mg/L	<0.020	<0.020	0.032	1.5	29
Cadmium (Cd)	mg/L	0.000021	<0.000020	0.000022	0.000040-0.000112 ⁴	0.000190-0.001376 ⁴
Calcium (Ca)	mg/L	5.8	2.5	16	-	-

Parameter	Units	Sampling Station			AB Surface Water Quality PAL Guidelines	
		S12 (Chrystina Lake)	Edith Lake	S5A (Coufts River)	Chronic (long-term)	Acute (short-term)
Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	-	-
Cobalt (Co)	mg/L	<0.00030	<0.00030	0.0019	0.00086 ⁴	-
Copper (Cu)	mg/L	<0.0010	<0.0010	<0.0010	0.007 ⁸	0.0016-0.0106 ⁴
Iron (Fe)	mg/L	0.16	0.21	2.6	-	-
Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.001-0.00187 ⁴	-
Lithium (Li)	mg/L	<0.020	<0.020	<0.020	-	-
Magnesium (Mg)	mg/L	1.3	0.49	4.6	-	-
Manganese (Mn)	mg/L	0.036	0.018	0.55	-	-
Mercury (Hg)	mg/L	<0.0000019	<0.0000019	0.0000019	0.000005	0.000013
Molybdenum (Mo)	mg/L	<0.00020	<0.00020	0.00022	0.073	-
Nickel (Ni)	mg/L	<0.00050	<0.00050	0.0021	0.00706-0.03670 ⁴	0.06347-0.33012 ⁴
Potassium (K)	mg/L	1.1	0.55	0.74	-	-
Selenium (Se)	mg/L	<0.00020	<0.00020	<0.00020	0.002	-
Silicon (Si)	mg/L	0.7	<0.50	7.2	-	-
Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00025	-
Sodium (Na)	mg/L	1.1	1.7	6	-	-
Strontium (Sr)	mg/L	0.028	<0.020	0.087	-	-
Sulphur (S)	mg/L	<0.20	0.31	0.38	-	-
Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.0008	-
Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	-	-
Titanium (Ti)	mg/L	<0.0010	<0.0010	<0.0010	-	-
Uranium (U)	mg/L	<0.00010	<0.00010	<0.00010	0.015	0.033
Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	-	-
Zinc (Zn)	mg/L	<0.0030	<0.0030	<0.0030	0.03	-
Dissolved Metals						
Calcium (Ca ²⁺)	mg/L	6.4	2.8	18	-	-
Iron (Fe ²⁺)	mg/L	<0.060	0.11	1.8	0.3	-
Magnesium (Mg ²⁺)	mg/L	1.4	0.56	4.9	-	-
Manganese (Mn ²⁺)	mg/L	<0.0040	<0.0040	0.59	-	-
Potassium (K ⁺)	mg/L	1.2	0.76	0.97	-	-
Sodium (Na ⁺)	mg/L	1.3	2	7.2	-	-

- Exceedance of or non-conformance with the respective long-term, chronic AB surface water quality PAL guideline.
- The respective long-term, chronic AB surface water quality PAL guideline is less than the reportable detection limit (RDL).
- 1

A minimum value; unless natural conditions are less, in which case the guideline cannot be lower than 25% of the natural level.
- 2

Varies with background level.
- 3

A range.
- 4

Varies with hardness.
- 5

Varies with chloride concentration.
- 6

Varies with pH and temperature.
- 7

Varies with background level and environmental setting.
- 8

Applies to waters of hardness ≥ 50 mg/L

3.2.3 Historical water data comparison

3.2.3.1 Routine and nutrients

The concentrations of the following routine and nutrient parameters exceeded the 95th percentile of historical data in 2025 (Table 3-2):

- Chrystina Lake:
 - Total alkalinity;
 - Bicarbonate;
 - Hardness;
 - Electrical conductivity;
 - Total dissolved solids;
 - Total Kjeldahl nitrogen;
 - Dissolved calcium;
 - Dissolved potassium; and
 - Dissolved magnesium.
- Edith Lake (reference site):
 - Hardness.
- S5A (Coutts River):
 - Total alkalinity;
 - Bicarbonate; and
 - Dissolved magnesium.

Across all three (3) monitoring stations, several routine parameters in 2025 were elevated above the historical 95th percentile, with the most pronounced departures observed at Chrystina Lake. As in 2024, Chrystina Lake exhibited elevated values for multiple major ion and routine chemistry parameters, including hardness, EC, and several dissolved ions. These patterns remain consistent with the lake's small watershed and limited buffering capacity, which make it more sensitive to climatic variation and seasonal hydrologic inputs. Edith Lake, by contrast, showed only one routine parameter—hardness—exceeding the historical 95th percentile in 2025, mirroring its generally stable historical profile and supporting its continued suitability as the regional reference site. S5A demonstrated elevated total alkalinity, bicarbonate, and dissolved magnesium relative to long-term conditions, a pattern similar to 2024, and likely associated with low-flow conditions in late fall rather than new external inputs.

Nutrient patterns in 2025 also closely resembled those documented in the 2024 monitoring year. At Chrystina Lake, total Kjeldahl nitrogen again exceeded the historical 95th percentile, consistent with long-term observations of elevated organic nitrogen during low-flow, late-season

conditions. Edith Lake and S5A exhibited nutrient concentrations largely within historical ranges, with no parameters showing new or unexpected departures from long-term percentiles. As in 2024, most inorganic nitrogen analytes—particularly nitrate and nitrite—were below analytical detection limits at all sites, limiting detailed historical comparisons but also aligning with the typically low inorganic nutrient conditions of these northern lakes and streams. Overall, the 2025 nutrient dataset reflects continuity with previous years, showing no evidence of emerging nutrient enrichment at either test or reference stations.

3.2.3.2 Metals

The concentrations of the following metal parameters exceeded the 95th percentile of historical data and are thus considered to be high in 2025 (Table 3-2):

- Chrystina Lake:
 - Total barium;
 - Total calcium;
 - Total potassium;
 - Total strontium;
 - Dissolved calcium;
 - Dissolved magnesium; and
 - Dissolved potassium
- S5A (Coutts River):
 - Total silicon;
 - Dissolved magnesium; and
 - Dissolved manganese

Relatively elevated metal concentrations in 2025 were primarily associated with Chrystina Lake, which again showed the greatest number of metals exceeding their historical 95th percentiles. Total barium, calcium, potassium, and strontium were all higher than long-term values, along with their corresponding dissolved fractions (Ca^{2+} , Mg^{2+} , K^{+}). This pattern is consistent with the results from 2024, when multiple major ions at Chrystina Lake were also above historical ranges. As observed in the previous year, these elevated values predominantly involve naturally occurring major ions rather than guideline-relevant toxic metals and likely reflect annual variability in hydrologic and geochemical conditions in a small, closed-basin lake system. The recurrence of elevated dissolved ions suggests that climatic influences—particularly low fall inflows, extended dry periods, and increased evaporative concentration—likely continue to exert a stronger influence on Chrystina Lake water chemistry than any facility-related effects.

At S5A, exceedances of historical 95th percentiles were limited to total silicon, dissolved magnesium, and dissolved manganese—parameters that have shown similar variability in past years and that are strongly influenced by natural geological and hydrological conditions. The 2024 program also documented relatively elevated silicon and major ion concentrations at S5A, indicating that the 2025 results are not anomalous but instead follow established patterns during low-flow autumn conditions when reduced dilution can elevate solute concentrations. No toxic metals exceeded historical percentiles at any site in 2025, and metal concentrations at Edith Lake, the reference station, remained fully within historical ranges, reinforcing its stability as a background comparison site. Collectively, the 2025 metals dataset continues to demonstrate that observed exceedances involve naturally variable major ions rather than contaminants of concern and does not indicate new or increasing metal inputs from SHTC operations.

Table 3-2: Analytes and parameters measured in water samples in 2025 as compared to the Alberta Surface Water Quality Guidelines for the Protection of Aquatic Life (Government of Alberta, 2018).

Parameter	Units	Sampling Station																	
		S12 (Chrystina Lake)						Edith Lake						S5A (Coufts River)					
		2025 Value	Historical (1985-2024)					2025 Value	Historical (1999-2024)					2025 Value	Historical (1985-2024)				
			n	x _{min}	$\bar{x}$	p ₉₅	x _{max}		n	x _{min}	$\bar{x}$	p ₉₅	x _{max}		n	x _{min}	$\bar{x}$	p ₉₅	x _{max}
Routine Parameters																			
Alkalinity, total (as CaCO ₃)	mg/L	23	31	12	17	21.275	22	9.2	27	3.5	6.5	10.775	11.2	75	31	15	40.35	72.1	84
Hydroxide (OH ⁻)	mg/L	<1	31	ID	ID	ID	ID	<1	27	ID	ID	ID	ID	<1	31	ID	ID	ID	ID
Bicarbonate (HCO ₃ ⁻)	mg/L	28	32	14	21	25.6	27	11	27	4.3	8	13.3	14	91	40	17.8	46.6	87.2	103
Carbonate (CO ₃ ²⁻)	mg/L	<1	31	ID	ID	ID	ID	<1	27	ID	ID	ID	ID	<1	31	ID	ID	ID	ID
Hardness (as CaCO ₃)	mg/L	22	30	13	16	18	18	9.4	27	5.7	7.95	9.175	9.4	66	30	11	43	70.6	85
Total Dissolved Solids (TDS)	mg/L	24	32	14	19	21.45	30	12	26	<10	10	15.32	24	85	42	23.42	50	90	103
Total Suspended Solids (TSS)	mg/L	4.7	29	<1.0	2.2	21.98	29	1.1	26	<1.0	2	12.6	19	<1.0	29	<1.0	2.85	12.09	16
pH	pH units	6.98	33	6.29	7.2	7.459	7.74	6.37	27	5.91	6.77	6.955	7.06	7.14	43	6.02	7.075	7.6485	7.68
Electrical Conductivity (EC)	µS/cm	48	33	31	36.7	41.45	50	25	27	20	24	26.9	51	140	43	46	86.6	150	189
Sulphate (SO ₄ ²⁻)	mg/L	<1	33	ID	ID	ID	ID	<1	27	ID	ID	ID	ID	<1	40	0.1	1	5.1	24
Chloride (Cl ⁻)	mg/L	<1	33	ID	ID	ID	ID	<1	27	ID	ID	ID	ID	6.5	41	0.3	5.1	15.055	19
Nutrients																			
Nitrate (as N)	mg/L	<0.04	33	ID	ID	ID	ID	<0.04	27	ID	ID	ID	ID	<0.04	41	ID	ID	ID	ID
Nitrite (as N)	mg/L	<0.04	30	ID	ID	ID	ID	<0.04	28	ID	ID	ID	ID	<0.04	29	ID	ID	ID	ID
Ammonia, total (as N)	mg/L	0.15	17	ID	ID	ID	ID	0.015	17	ID	ID	ID	ID	0.015	17	ID	ID	ID	ID
Phosphorus, total (as P)	mg/L	0.012	28	ID	ID	ID	ID	0.018	27	ID	ID	ID	ID	0.05	28	ID	ID	ID	ID
Total Kjeldahl Nitrogen (TKN)	mg/L	0.88	16	0.29	0.39	0.5291	0.546	0.67	17	0.4	0.57	0.741	0.79	0.49	16	0.388	0.605	1.105	1.3
Total Organic Carbon (TOC)	mg/L	8.2	29	5.9	8.15	11.195	15	12	24	10	12.3	15.9	21	17	29	9.6	19.75	25.79	27
Biological																			
Chlorophyll a	µg/L	5.6	17	2.62	6.88	8.425	8.5	7.9	17	1.56	7.59	16.25	17	1.9	15	<0.50	1.54	3.6415	5
Total Metals																			
Aluminum (Al)	mg/L	0.0082	28	0.01	0.021	0.1965	0.286	0.031	26	0.01	0.0305	0.063	0.117	0.052	28	0.031	0.12	0.2489	0.38

Parameter	Units	Sampling Station																	
		S12 (Chrystina Lake)						Edith Lake						S5A (Coufts River)					
		2025 Value	Historical (1985-2024)					2025 Value	Historical (1999-2024)					2025 Value	Historical (1985-2024)				
			n	x _{min}	$\bar{x}$	p ₉₅	x _{max}		n	x _{min}	$\bar{x}$	p ₉₅	x _{max}		n	x _{min}	$\bar{x}$	p ₉₅	x _{max}
Antimony (Sb)	mg/L	<0.0006	29	ID	ID	ID	ID	<0.0006	27	ID	ID	ID	ID	<0.0006	29	ID	ID	ID	ID
Arsenic (As)	mg/L	0.0006	29	<0.0002	0.000455	0.000626	0.0018	0.00053	27	<0.0002	0.00047	0.000713	0.0018	0.0015	29	0.0003	0.00115	0.002765	0.0034
Barium (Ba)	mg/L	0.042	29	0.013	0.0236	0.03	0.032	0.02	27	0.0035	0.0142	0.02075	0.025	0.051	29	0.025	0.04025	0.0559	0.0639
Beryllium (Be)	mg/L	<0.001	29	ID	ID	ID	ID	<0.001	27	ID	ID	ID	ID	<0.001	29	ID	ID	ID	ID
Boron (B)	mg/L	<0.02	28	ID	ID	ID	ID	<0.02	27	ID	ID	ID	ID	0.032	28	ID	ID	ID	ID
Cadmium (Cd)	mg/L	0.000021	29	ID	ID	ID	ID	<0.000020	27	ID	ID	ID	ID	0.000022	29	ID	ID	ID	ID
Calcium (Ca)	mg/L	5.8	28	3.3	4.2	5.494	5.6	2.5	27	1.9	2.4	2.875	3.3	16	28	6.5	13	20.14	24.5
Chromium (Cr)	mg/L	<0.001	29	ID	ID	ID	ID	<0.001	27	ID	ID	ID	ID	<0.001	29	ID	ID	ID	ID
Cobalt (Co)	mg/L	<0.0003	29	ID	ID	ID	ID	<0.0003	27	ID	ID	ID	ID	0.0019	29	<0.00030	0.0007	0.00304	0.0048
Copper (Cu)	mg/L	<0.001	29	<0.0002	0.0004	0.001755	0.0032	<0.001	27	<0.0002	0.000395	0.000775	0.0009	<0.001	29	<0.0002	0.0005	0.00337	0.006
Iron (Fe)	mg/L	0.16	29	0.02	0.145	0.2825	0.66	0.21	27	0.1	0.285	0.5025	0.58	2.6	29	0.098	1.775	4.872	5.3
Lead (Pb)	mg/L	<0.0002	29	ID	ID	ID	ID	<0.0002	27	ID	ID	ID	ID	<0.0002	29	ID	ID	ID	ID
Lithium (Li)	mg/L	<0.02	28	ID	ID	ID	ID	<0.02	27	ID	ID	ID	ID	<0.02	28	ID	ID	ID	ID
Magnesium (Mg)	mg/L	1.3	28	0.98	1.1	1.3	1.7	0.49	27	0.39	0.5	0.6	0.7	4.6	28	1.7	3.3	5.24	5.9
Manganese (Mn)	mg/L	0.036	29	<0.004	0.0255	0.0478	0.061	0.018	27	0.008	0.025	0.04175	0.088	0.55	29	0.021	0.11	0.83555	1.1
Mercury (Hg)	mg/L	<0.0000019	29	ID	ID	ID	ID	<0.0000019	27	ID	ID	ID	ID	0.0000019	28	ID	ID	ID	ID
Molybdenum (Mo)	mg/L	<0.0002	29	ID	ID	ID	ID	<0.0002	27	ID	ID	ID	ID	0.00022	29	ID	ID	ID	ID
Nickel (Ni)	mg/L	<0.0005	29	ID	ID	ID	ID	<0.0005	27	<0.0005	0.000545	0.00155	0.004	0.0021	29	<0.0005	0.002	0.004455	0.0056
Potassium (K)	mg/L	1.1	28	<0.3	0.73	0.956	1.7	0.55	27	<0.30	0.63	1.5	2	0.74	28	0.3	0.62	1.34	1.4
Selenium (Se)	mg/L	<0.0002	29	ID	ID	ID	ID	<0.0002	27	ID	ID	ID	ID	<0.0002	29	ID	ID	ID	ID
Silicon (Si)	mg/L	0.7	28	0.1	0.32	0.758	0.99	<0.5	27	<0.1	0.27	0.6875	0.71	7.2	28	0.38	4.6	7.08	8
Silver (Ag)	mg/L	<0.0001	29	ID	ID	ID	ID	<0.0001	27	ID	ID	ID	ID	<0.0001	29	ID	ID	ID	ID
Sodium (Na)	mg/L	1.1	28	<0.5	1.1	1.514	1.6	1.7	27	<0.5	1.75	2.175	2.3	6	28	3.3	5.4	8.09	9.9
Strontium (Sr)	mg/L	0.028	28	0.007	0.02	0.0247	0.026	<0.02	27	ID	ID	ID	ID	0.087	28	0.02	0.051	0.0921	0.11
Sulphur (S)	mg/L	<0.2	28	<0.2	0.22	1.85	661	0.31	27	<0.2	0.51	0.795	1.3	0.38	28	0.1	0.5	3.8	6.7
Thallium (Tl)	mg/L	<0.0002	29	ID	ID	ID	ID	<0.0002	27	ID	ID	ID	ID	<0.0002	29	ID	ID	ID	ID
Tin (Sn)	mg/L	<0.001	27	ID	ID	ID	ID	<0.001	27	ID	ID	ID	ID	<0.001	27	ID	ID	ID	ID
Titanium (Ti)	mg/L	<0.001	28	ID	ID	ID	ID	<0.001	27	ID	ID	ID	ID	<0.001	28	<0.001	0.002	0.0087	0.037
Uranium (U)	mg/L	<0.0001	28	ID	ID	ID	ID	<0.0001	27	ID	ID	ID	ID	<0.0001	28	ID	ID	ID	ID

Parameter	Units	Sampling Station																	
		S12 (Chrystina Lake)						Edith Lake					S5A (Coufts River)						
		2025 Value	Historical (1985-2024)					2025 Value	Historical (1999-2024)					2025 Value	Historical (1985-2024)				
			<i>n</i>	<i>x</i> _{min}	<i>x̄</i>	<i>p</i> ₉₅	<i>x</i> _{max}		<i>n</i>	<i>x</i> _{min}	<i>x̄</i>	<i>p</i> ₉₅	<i>x</i> _{max}		<i>n</i>	<i>x</i> _{min}	<i>x̄</i>	<i>p</i> ₉₅	<i>x</i> _{max}
Vanadium (V)	mg/L	<0.001	29	ID	ID	ID	ID	<0.001	27	ID	ID	ID	ID	<0.001	29	ID	ID	ID	ID
Zinc (Zn)	mg/L	<0.003	29	ID	ID	ID	ID	<0.003	27	ID	ID	ID	ID	<0.003	29	<0.003	0.0055	0.03241	0.036
Dissolved Metals																			
Calcium (Ca ²⁺)	mg/L	6.4	33	3.5	4.5	5.245	5.3	2.8	27	1.7	2.4	2.8	2.8	18	41	3.2	11.05	19.05	24.4
Iron (Fe ²⁺)	mg/L	<0.06	28	ID	ID	ID	ID	0.11	27	<0.01	0.13	0.3325	0.48	1.8	28	0.005	1.1	2.86	3.4
Magnesium (Mg ²⁺)	mg/L	1.4	33	1	1.195	1.345	1.6	0.56	27	0.4	0.5	0.6	0.6	4.9	41	0.82	2.8	4.75	5.9
Manganese (Mn ²⁺)	mg/L	<0.004	28	ID	ID	ID	ID	<0.004	27	<0.001	0.005	0.02275	0.043	0.59	28	0.002	0.044	0.4849	1.1
Potassium (K ⁺)	mg/L	1.2	33	<0.3	0.765	1.0045	1.7	0.76	27	<0.3	0.64	0.875	2	0.97	41	0.15	0.49	1.2	1.4
Sodium (Na ⁺)	mg/L	1.3	33	<0.5	1.2	1.545	2.3	2	27	<0.5	1.8	2.2	2.3	7.2	41	1.3	4.1	8.11	9.2

Value is above the 95th percentile of the historical data.
n Sample size (number of observations).
*x*_{min} Minimum value.
x̄ Median value.
*p*₉₅ 95th percentile.
*x*_{max} Maximum value.
ID Insufficient data.

3.2.4 Trend analysis

The results of the trend analysis are summarized below and illustrated in Appendix A.

3.2.4.1 Routine and nutrients

The following parameters had a significant ($\alpha = 0.1$) trend over the last 10 years, with the inclusion of 2025 data:

- Chrystina Lake:
 - Increasing trend in:
 - Alkalinity;
 - Bicarbonate;
 - Total dissolved solids (TDS);
 - Total sodium; and
 - Dissolved potassium.
 - Decreasing trend in:
 - pH
- Edith Lake (reference site):
 - Increasing trend in:
 - Alkalinity;
 - Bicarbonate; and
 - Total Kjeldahl nitrogen (TKN).
- S5A (Coutts River):
 - Increasing trend in:
 - Alkalinity;
 - Bicarbonate;
 - Electrical conductivity (EC)
 - Total magnesium; and
 - Total sodium.

Several routine and nutrient parameters exhibited statistically significant ($\alpha < 0.1$) trends over the most recent 10-year period when the 2025 data were incorporated into the moving-window analysis. At Chrystina Lake, increasing trends were detected for alkalinity, bicarbonate, total dissolved solids (TDS), total sodium, and dissolved potassium, indicating a continued gradual enrichment of dissolved ions within the lake. These trends are consistent with the 2024 findings, which similarly documented upward trajectories in several major ion parameters at this site. The increasing ion concentrations likely reflect the lake's small watershed, low buffering capacity, and sensitivity to evaporative concentration and seasonal water balance. Chrystina Lake again

demonstrated a significant decreasing trend in pH, reinforcing the downward trajectory identified in the 2024 assessment and suggesting that long-term, regional acidification processes—likely driven by natural watershed and hydrologic controls—remain ongoing (CPP Environmental, 2025).

At Edith Lake, the reference site, increasing trends in alkalinity, bicarbonate, and total Kjeldahl nitrogen (TKN) were observed. These patterns mirror those identified in 2024 and continue to fall within the range expected for a naturally acidic lake surrounded by peatlands. The persistent upward trend in TKN at Edith Lake is consistent with historical nutrient cycling dynamics and does not indicate a new or emerging influence from the SHTC. At Station S5A on the Coutts River, increasing trends were detected for alkalinity, bicarbonate, electrical conductivity (EC), total magnesium, and total sodium. As in 2024, these trends align with the low-flow autumn sampling conditions characteristic of the monitoring program, during which reduced discharge can elevate dissolved ion concentrations. Collectively, the 2025 trend results for routine and nutrient parameters sustain the interpretation that observed patterns are shaped primarily by natural hydrologic variability and watershed processes rather than facility-related effects.

3.2.4.2 Metals

The following metal parameters had a significant ($\alpha = 0.1$) trend over the last 10 years, with the inclusion of 2025 data:

- Chrystina Lake:
 - Increasing trend in:
 - Total barium; and
 - Total strontium.
- Edith Lake (reference site):
 - Increasing trend in:
 - Total copper.
 - Decreasing trend in:
 - Total aluminum;
 - Total sulphur.
 - Total silicon; and
- S5A (Coutts River):
 - Increasing trend in:
 - Total arsenic;
 - Total silicon.
 - Total iron; and

Several metal parameters exhibited statistically significant trends ($\alpha < 0.1$) over the most recent 10-year period with the inclusion of 2025 data. At Chrystina Lake, increasing trends were detected for total barium and total strontium, continuing the multi-year pattern of gradual increases in major ions previously observed in the 2024 monitoring year. These upward trends are consistent with the concurrent increases in routine parameters such as alkalinity, bicarbonate, total sodium, dissolved potassium, and TDS, reflecting the lake's susceptibility to evaporative concentration and seasonal shifts in watershed inputs. As in prior years, these metals remain well below applicable surface water guideline values—the federal environmental quality guideline for strontium is 2.5 mg/L (Environment and Climate Change Canada, 2020)—and their increasing trajectories are interpreted as reflective of natural geochemical dynamics rather than changes in atmospheric deposition from the SHTC.

At the Edith Lake reference station, a modest increasing trend in total copper was observed, accompanied by decreasing trends in total aluminum, total silicon, and total sulphur. This pattern mirrors the decreasing trends reported in 2024 for aluminum and silicon, further supporting the conclusion that these shifts are driven by natural watershed processes—particularly the acidic, peatland-dominated catchment—and not by facility-related inputs. The copper trend remains low in magnitude, with concentrations well within historical and guideline ranges, and does not suggest emerging concern at the reference station.

At S5A in the Coutts River, increasing trends were identified for total arsenic, total iron, and total silicon, all of which are metals known to be strongly influenced by natural mineralogy and hydrologic conditions. These trends are consistent with the upward trajectories for iron and silicon at this station. Late-season low-flow conditions, which reduce dilution capacity and enhance mobilization of redox-sensitive or mineral-associated constituents, likely contribute to the observed trends. Importantly, the increasing metals at S5A remain within historical variability and below guideline thresholds and thus do not indicate a new or increasing facility influence.

Table 3-3: Trend analysis results.

Parameter	Sampling Station								
	S12 (Chrystina Lake)			Edith Lake			S5A (Coutts River)		
	Trend	M-K τ	p-value	Trend	M-K τ	p-value	Trend	M-K τ	p-value
Routine Parameters									
Alkalinity, total (as CaCO ₃)	Up*	0.519	0.055	Up**	0.584	0.025	Up**	0.539	0.039
Hydroxide (OH ⁻)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Bicarbonate (HCO ₃ ⁻)	Up**	0.549	0.043	Up**	0.568	0.03	Up**	0.511	0.049
Carbonate (CO ₃ ²⁻)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Hardness (as CaCO ₃)	NT	0.097	0.781	NT	0.25	0.367	NT	0.296	0.279
Total Dissolved Solids (TDS)	Up*	0.506	0.057	NT	0.074	0.852	NT	0.36	0.178
Total Suspended Solids (TSS)	NT	0.225	0.419	NT	-0.25	0.367	ID	ID	ID
pH	Down***	-0.689	0.007	NT	-0.289	0.283	NT	-0.111	0.721
Electrical Conductivity (EC)	NT	0.163	0.584	NT	0.119	0.712	Up*	0.494	0.059
Sulphate (SO ₄ ²⁻)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Chloride (Cl ⁻)	ID	ID	ID	ID	ID	ID	NT	-0.159	0.589
Nutrients									
Nitrate (as N)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Nitrite (as N)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Ammonia, total (as N)	NT	0.051	0.923	NT	0	1	ID	ID	ID
Phosphorus, total (as P)	NT	-0.256	0.385	NT	-0.277	0.337	NT	-0.054	0.919
Total Kjeldahl Nitrogen (TKN)	NT	0.389	0.175	Up*	0.535	0.059	NT	0.056	0.917

Parameter	Sampling Station								
	S12 (Chrystina Lake)			Edith Lake			S5A (Coufts River)		
	Trend	M-K τ	p-value	Trend	M-K τ	p-value	Trend	M-K τ	p-value
Total Organic Carbon (TOC)	NT	-0.205	0.471	NT	-0.319	0.262	NT	-0.36	0.178
Biological									
Chlorophyll a	NT	0.333	0.21	NT	0.378	0.152	NT	0.022	1
Total Metals									
Aluminum (Al)	NT	-0.092	0.786	Down**	-0.552	0.037	NT	-0.405	0.127
Antimony (Sb)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Arsenic (As)	NT	0.138	0.65	NT	-0.225	0.419	Up**	0.6	0.02
Barium (Ba)	Up***	0.911	<0.001	NT	-0.023	1	NT	0.27	0.323
Beryllium (Be)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Boron (B)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Cadmium (Cd)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Calcium (Ca)	NT	0.322	0.238	NT	0.303	0.274	NT	0.405	0.127
Chromium (Cr)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Cobalt (Co)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Copper (Cu)	NT	-0.025	1	Up*	0.479	0.084	NT	0.387	0.162
Iron (Fe)	NT	-0.432	0.105	NT	-0.244	0.371	Up***	0.719	0.005
Lead (Pb)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Lithium (Li)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Magnesium (Mg)	NT	0.417	0.137	NT	0.289	0.283	Up*	0.449	0.088
Manganese (Mn)	NT	0.653	0.135	NT	-0.092	0.786	NT	0.333	0.21

Parameter	Sampling Station								
	S12 (Chrystina Lake)			Edith Lake			S5A (Coufts River)		
	Trend	M-K τ	p-value	Trend	M-K τ	p-value	Trend	M-K τ	p-value
Mercury (Hg)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Molybdenum (Mo)	ID	ID	ID	ID	ID	ID	NT	0.167	0.578
Nickel (Ni)	ID	ID	ID	NT	-0.114	0.718	NT	0.27	0.323
Potassium (K)	NT	0.422	0.107	NT	0.18	0.53	NT	0.244	0.371
Selenium (Se)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Silicon (Si)	NT	-0.159	0.589	Down***	-0.788	0.003	Up**	0.568	0.03
Silver (Ag)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Sodium (Na)	Up**	0.723	0.011	NT	0.105	0.771	Up**	0.568	0.03
Strontium (Sr)	Up**	0.644	0.015	ID	ID	ID	NT	0.244	0.371
Sulphur (S)	ID	ID	ID	Down*	-0.449	0.088	NT	-0.244	0.371
Thallium (Tl)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Tin (Sn)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Titanium (Ti)	ID	ID	ID	ID	ID	ID	NT	-0.349	0.202
Uranium (U)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Vanadium (V)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Zinc (Zn)	ID	ID	ID	ID	ID	ID	ID	ID	ID
Dissolved Metals									
Calcium (Ca ²⁺)	NT	0.23	0.415	NT	0.283	0.314	NT	0.315	0.243
Iron (Fe ²⁺)	ID	ID	ID	NT	-0.159	0.589	NT	0.405	0.127
Magnesium (Mg ²⁺)	NT	-0.05	0.925	NT	0.068	0.857	NT	0.341	0.207

Parameter	Sampling Station								
	S12 (Chrystina Lake)			Edith Lake			S5A (Couffts River)		
	Trend	M-K τ	p-value	Trend	M-K τ	p-value	Trend	M-K τ	p-value
Manganese (Mn ²⁺)	ID	ID	ID	NT	-0.277	0.337	NT	0.244	0.371
Potassium (K ⁺)	Up*	0.467	0.074	NT	-0.045	0.928	NT	0.315	0.243
Sodium (Na ⁺)	NT	0.167	0.58	NT	-0.116	0.715	NT	0.18	0.53

	Statistically significant trend detected.
M-K τ	Mann Kendall test tau statistic.
p-value	Significance
Up	Upward trend
Down	Downward trend
*	Significant trend detected at a 90% confidence level.
**	Significant trend detected at a 95% confidence level.
***	Significant trend detected at a 99% confidence level.
NT	No trend detected
ID	Insufficient data present to conduct trend analysis

4. Discussion

The 2025 surface water quality results indicate that conditions across the three (3) monitoring stations—Chrystina Lake, Edith Lake, and the Coutts River (S5A)—remain broadly consistent with long-term historical patterns and comparable to those observed in 2024. Most routine, nutrient, and metal parameters met the applicable Alberta Surface Water Quality PAL Guidelines, with exceedances limited to pH and total alkalinity at Edith Lake (reflective of naturally acidic peatland-influenced waters) and dissolved iron and total cobalt at S5A. These exceedances mirror those reported in 2024 (at least of dissolved iron) and are characteristic of naturally elevated concentrations in northern Alberta surface waters rather than indications of anthropogenic influence. Importantly, all guideline-relevant toxic metals—such as arsenic, cadmium, mercury, nickel, and lead—remained below their respective chronic thresholds in 2025.

Comparison of 2025 results with long-term historical datasets revealed several routine and metal parameters exceeding their respective 95th percentiles, particularly at Chrystina Lake, where elevated concentrations of major ions (e.g., alkalinity, hardness, TDS, dissolved Ca, Mg, K) were again observed. This pattern closely aligns with 2024 and likely reflects Chrystina Lake's sensitivity to hydrologic and climatic variability, owing to its small watershed and shallow depth. Elevated major ions at S5A, including total alkalinity, bicarbonate, and dissolved magnesium, also paralleled observations from 2024 and were likely influenced by the very low flow conditions recorded during the October sampling period. At the reference station, Edith Lake, only hardness exceeded the historical 95th percentile, consistent with the stability and predictability of this site in previous monitoring years.

Trend analysis results further support the interpretation that long-term changes in water quality remain dominated by natural watershed and hydrologic processes, rather than changes attributable to SHTC operations. Chrystina Lake continued to show increasing trends in major ions (e.g., alkalinity, bicarbonate, TDS, sodium) and a statistically significant decreasing trend in pH, mirroring the multi-year pattern highlighted in the 2024 report (CPP Environmental, 2025). These trends are most plausibly associated with the lake's hydrological isolation, sensitivity to evapoconcentration, and limited buffering capacity. Edith Lake once again demonstrated increasing trends in alkalinity, bicarbonate, and TKN, and decreasing trends in silicon and aluminum—patterns consistent with long-standing geochemical processes in the peatland-dominated watershed.

Several statistically significant metal trends were observed in 2025, but their magnitudes and context indicate natural origins. At Chrystina Lake, barium and strontium continued the upward trajectory reported in 2024, consistent with enhanced mineral mobilization during periods of concentrated lake water. At S5A, increasing trends in arsenic, iron, and silicon were again detected and remain within historical variability. These metals are commonly influenced by redox conditions and natural mineralogy, and their increased concentrations correspond with the persistently low-flow autumn conditions characteristic of the sampling period. Edith Lake showed decreasing trends in aluminum, silicon, and sulphur and a modest increasing trend in copper, none of which suggest anthropogenic loading or facility-related impacts.

Taken together, the 2025 results reaffirm the conclusions of recent monitoring years: surface water quality in the receiving environment remains largely within the bounds of natural variability, and observed exceedances or trends are best aligned with hydrologic conditions, geologic influences, and watershed characteristics rather than SHTC emissions. The absence of concerning trends in guideline-relevant contaminants, demonstrates that the SHTC is not exerting a measurable adverse influence on regional surface water quality. The cumulative evidence from 2024 and 2025 supports the ongoing effectiveness of the monitoring program and provides confidence that current operations are not contributing to degradation of aquatic conditions in the local environment.

5. Conclusions and recommendations

The 2025 surface water monitoring results indicate that water quality in the receiving environment surrounding the SHTC remains largely consistent with long-term historical conditions and comparable to findings from the 2024 program. Routine and nutrient parameters continued to show minimal exceedances of provincial PAL guidelines, with pH and alkalinity at Edith Lake and dissolved iron and total cobalt at S5A reflecting naturally occurring conditions rather than anthropogenic influence. Although several routine chemistry and major ion parameters exceeded historical 95th percentiles—most notably at Chrystina Lake—these exceedances were similarly documented in 2024 and are characteristic of the natural hydrologic and geochemical variability that occurs in small, peatland-influenced watersheds and low-flow stream systems.

Trend analysis results from 2025 further support the interpretation that observed changes in water quality are driven primarily by natural watershed processes rather than by SHTC operations. Key trends identified in 2024, such as increasing concentrations of major ions at Chrystina Lake, decreasing pH, and stable or decreasing trends in several metals at Edith Lake, persisted into 2025. At S5A, increasing trends in arsenic, iron, and silicon remained within historical ranges and below guideline thresholds, consistent with the stream's sensitivity to seasonal low-flow conditions. The stability of the reference site and the absence of concerning trends in guideline-relevant contaminants at all stations reinforce the conclusion that the SHTC is not exerting a measurable effect on regional surface water quality.

Based on these findings, it is recommended that the current monitoring program be continued without modification, including annual surface water sampling monitoring. Continued tracking of parameters with persistent trends—such as pH and major ions at Chrystina Lake and TKN at Edith Lake—is warranted to confirm whether the observed trajectories stabilize or continue over time. Flow monitoring at S5A should also continue to be prioritized, as improved flow-chemistry datasets will strengthen the interpretation of trends in riverine parameters influenced by hydrologic variability. Overall, the 2025 results demonstrate that existing monitoring frequency and methods remain appropriate for detecting potential changes in water quality and for ensuring continued protection of aquatic life in the region.

6. References

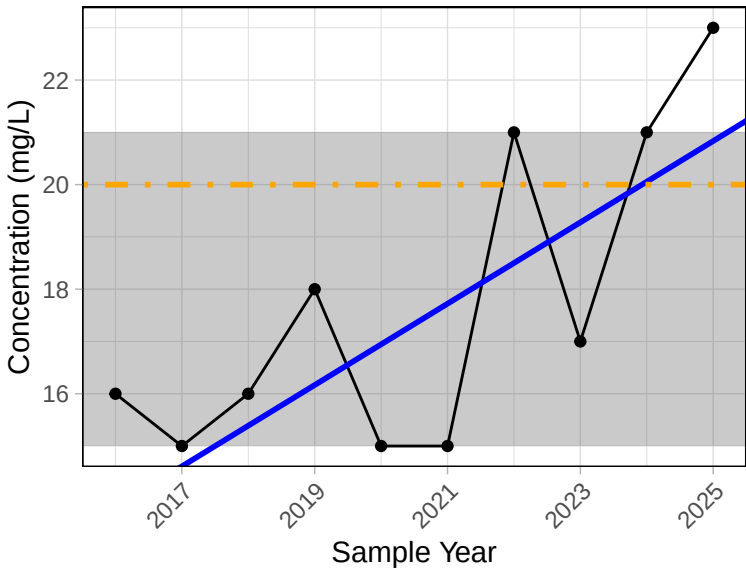
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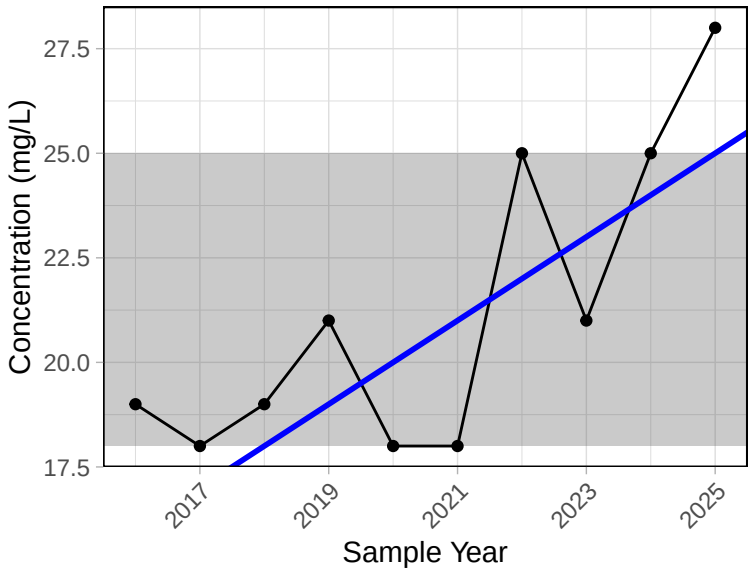
Appendix A: Trend Analysis Graphs

Total Alkalinity (as CaCO_3)

Chrystina Water

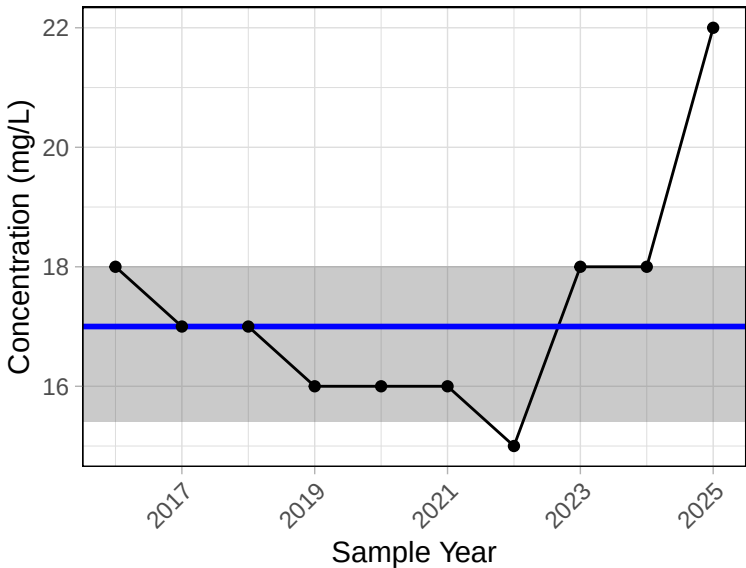


Bicarbonate Chrystina Water



Hardness

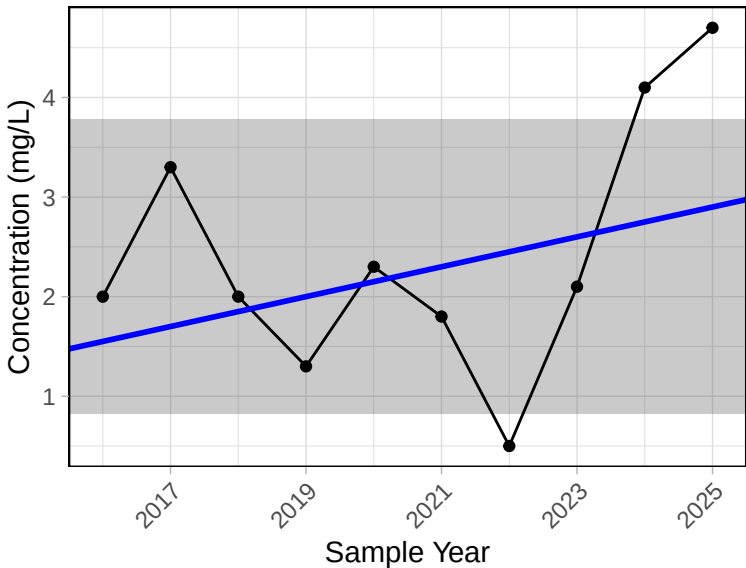
Chrystina Water



Trend significance p-value = 0.781

Total Suspended Solids

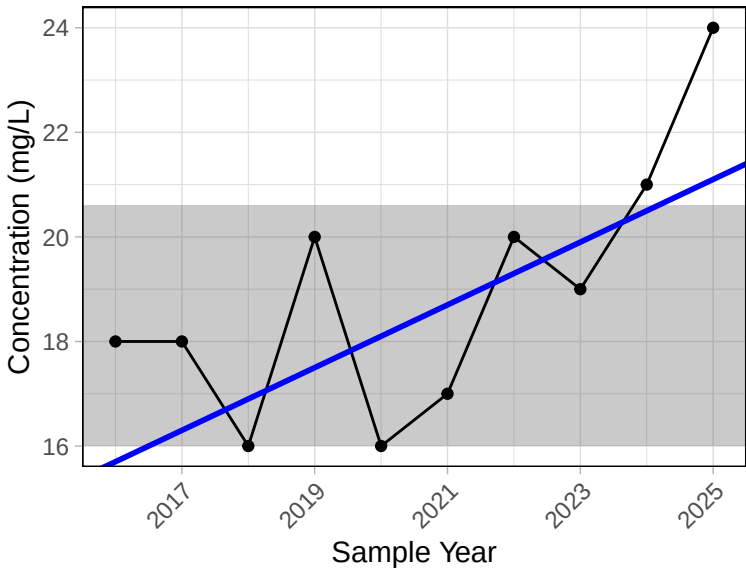
Chrystina Water



Trend significance p-value = 0.419

Total Dissolved Solids

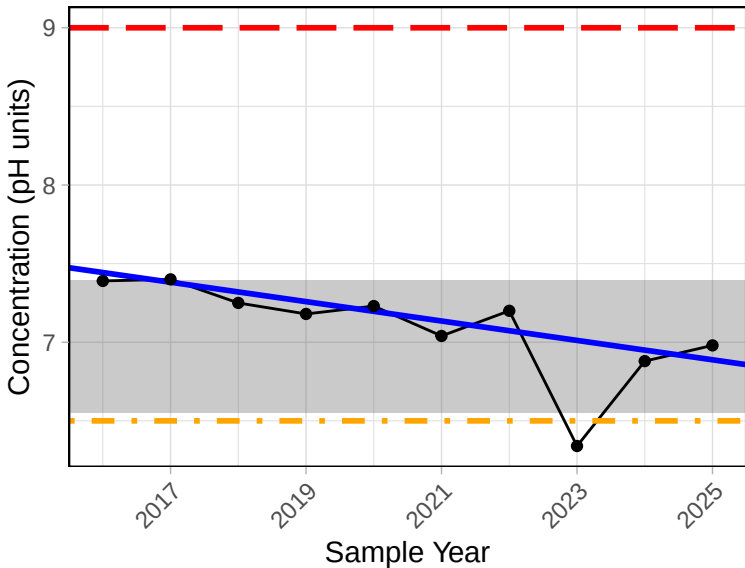
Chrystina Water



Trend significance p-value = 0.057

pH

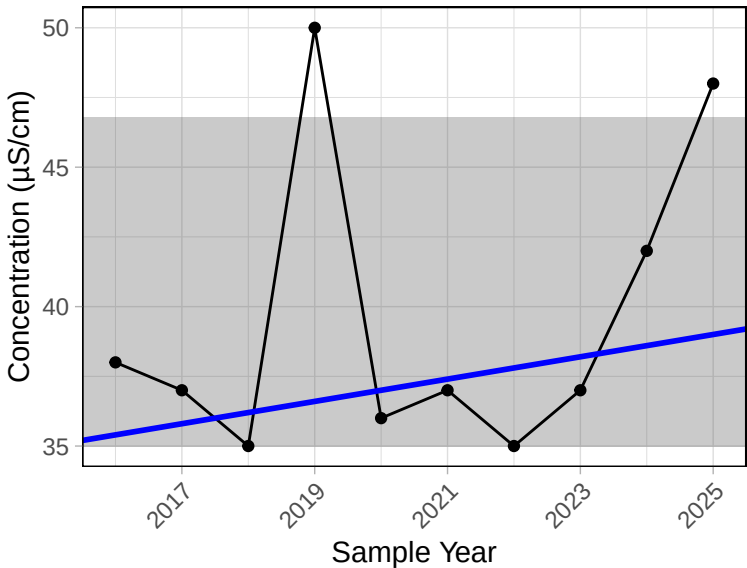
Chrystina Water



Trend significance p-value = 0.007
Chronic level = 6.5 pH units (minimum)
Acute level = 9 pH units (maximum)

Electrical Conductivity

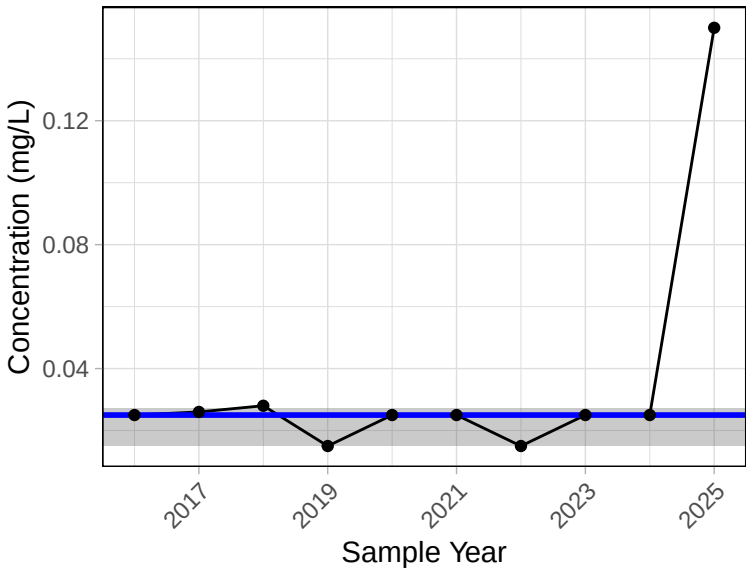
Chrystina Water



Trend significance p-value = 0.584

Ammonia as Nitrogen (total)

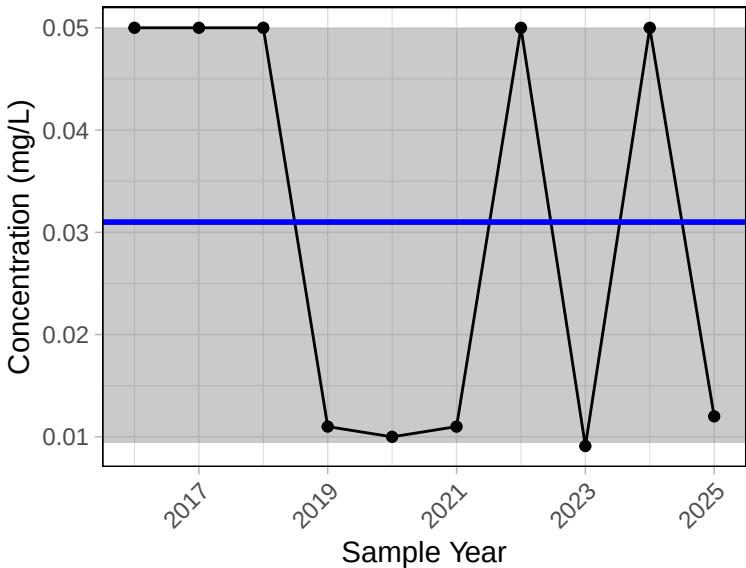
Chrystina Water



Trend significance p-value = 0.923

Phosphorus (total)

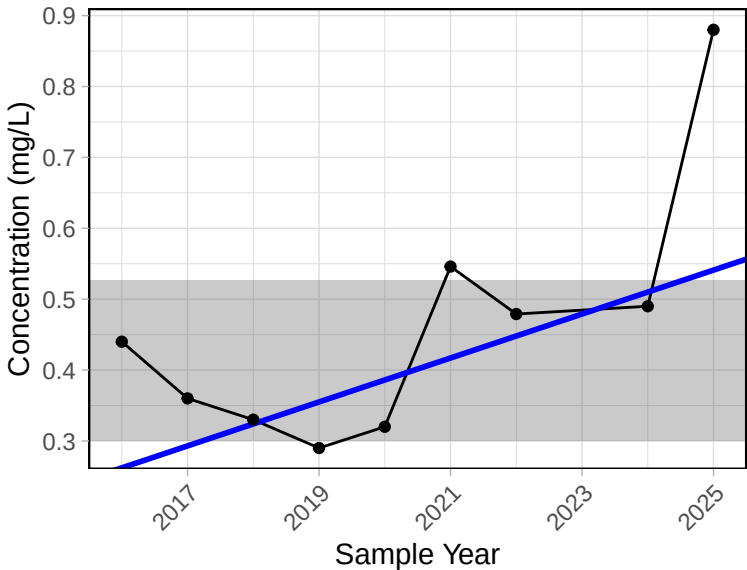
Chrystina Water



Trend significance p-value = 0.385

Total Kjeldahl Nitrogen

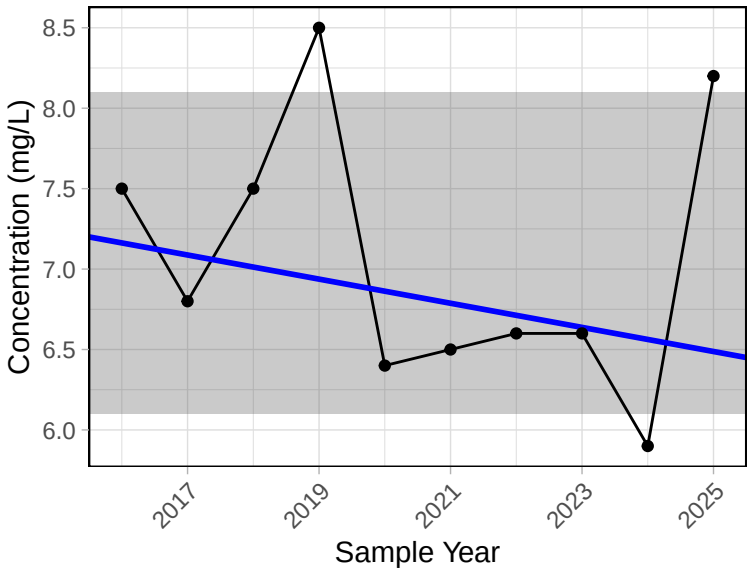
Chrystina Water



Trend significance p-value = 0.175

Total Organic Carbon

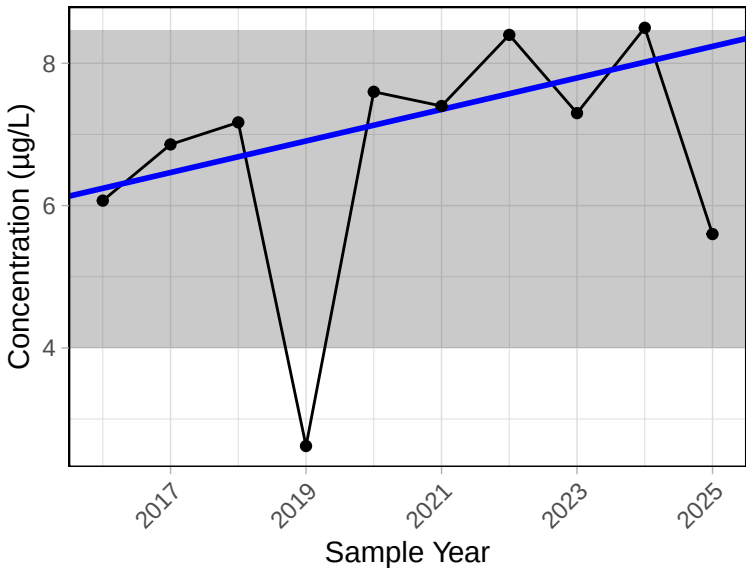
Chrystina Water



Trend significance p-value = 0.471

Chlorophyll a

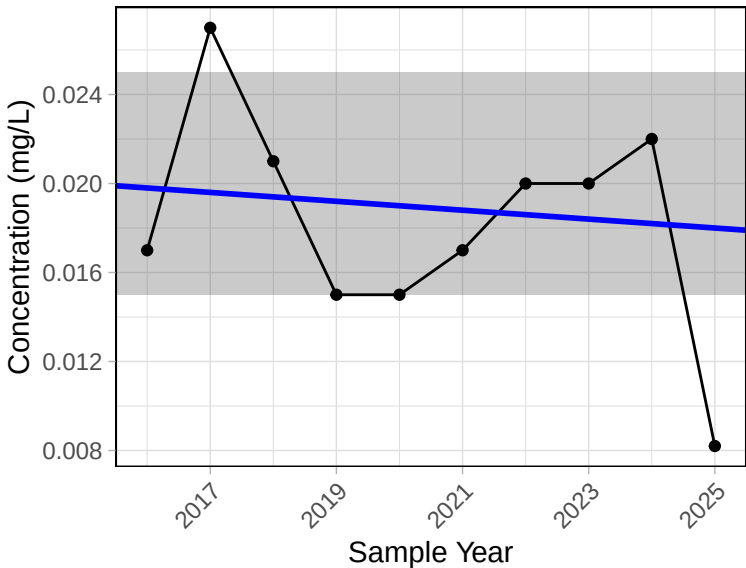
Chrystina Water



Trend significance p-value = 0.21

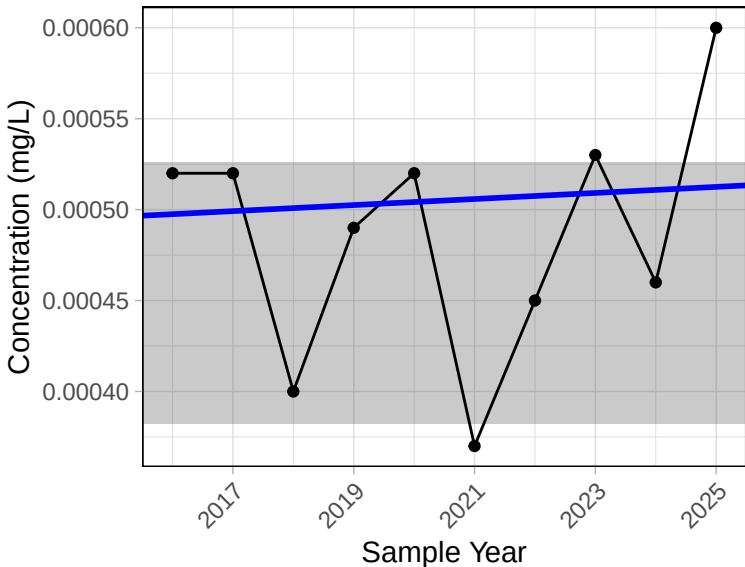
Aluminum (total)

Chrystina Water



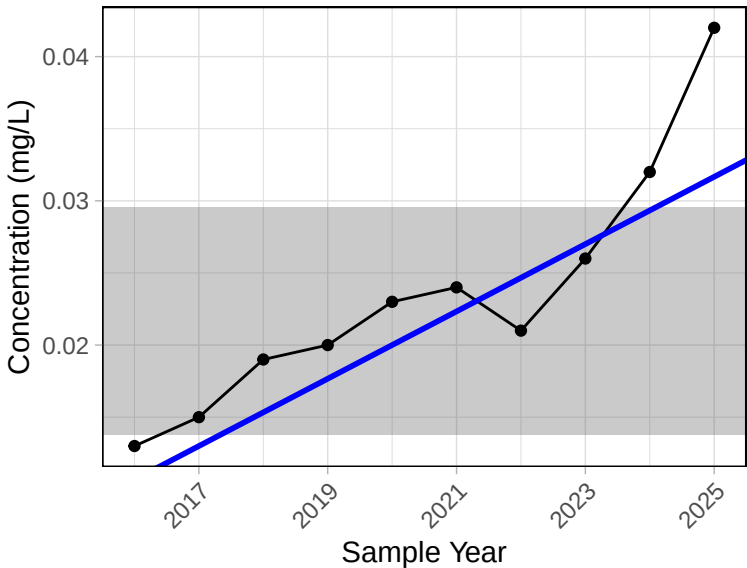
Trend significance p-value = 0.786

Arsenic (total) Chrystina Water



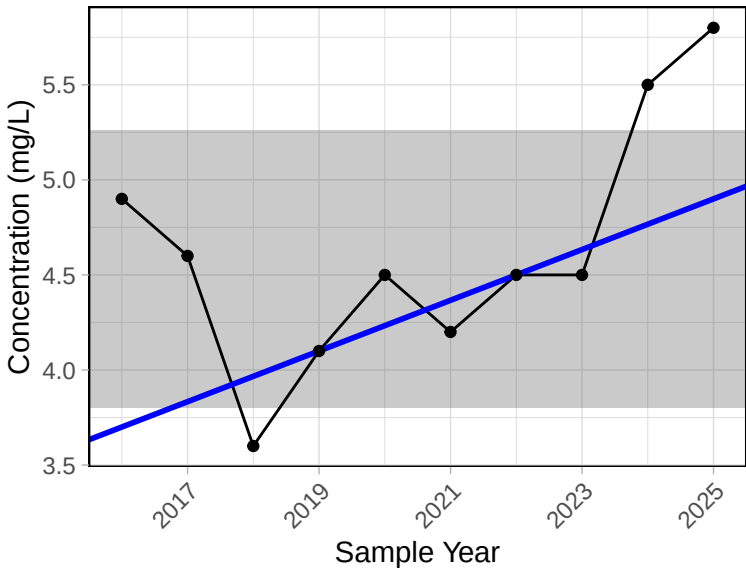
Trend significance p-value = 0.65
Chronic level = 0.005 mg/L (maximum)

Barium (total) Chrystina Water



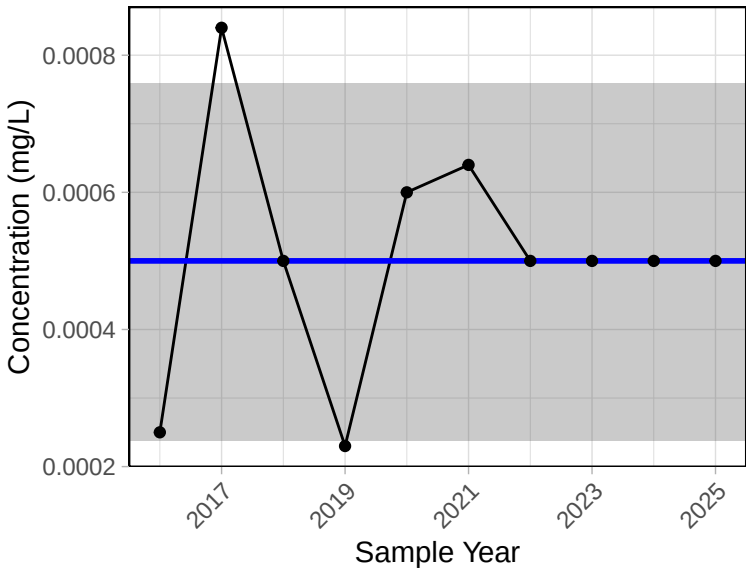
Trend significance p-value = <0.001

Calcium (total) Chrystina Water



Trend significance p-value = 0.238

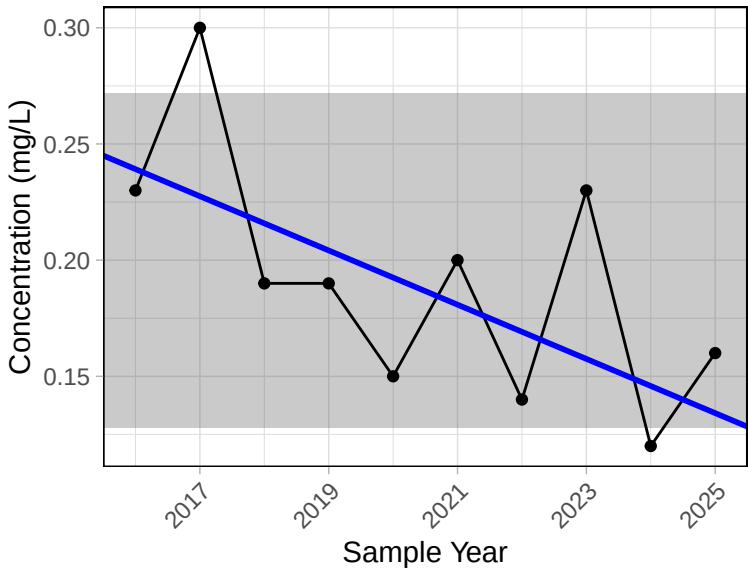
Copper (total) Chrystina Water



Trend significance p-value = 1

Acute level = 0.0033 mg/L

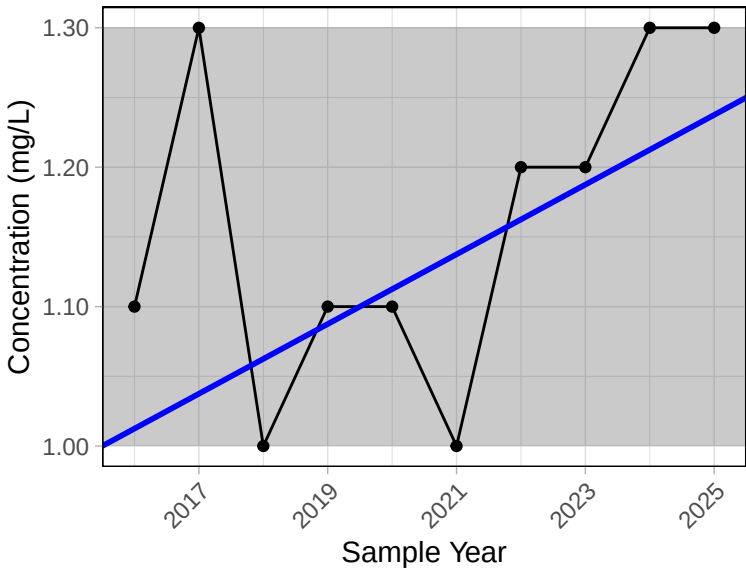
Iron (total) Chrystina Water



Trend significance p-value = 0.105

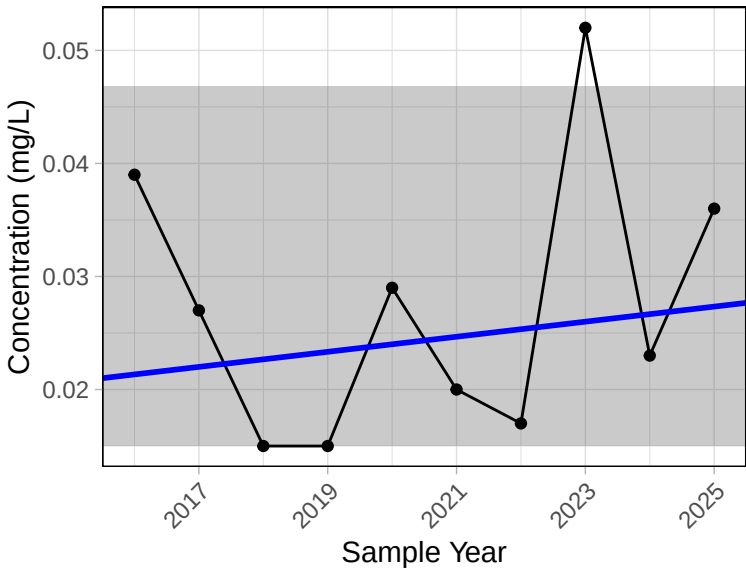
Magnesium (total)

Chrystina Water



Manganese (total)

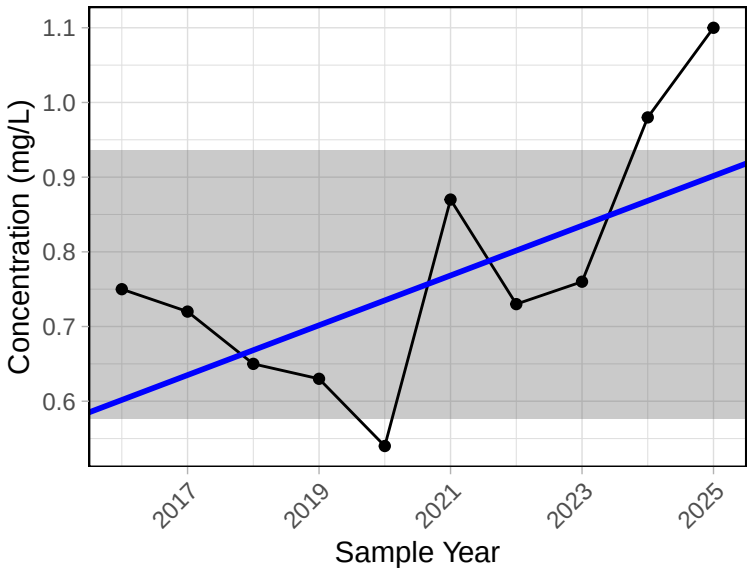
Chrystina Water



Trend significance p-value = 0.653

Potassium (total)

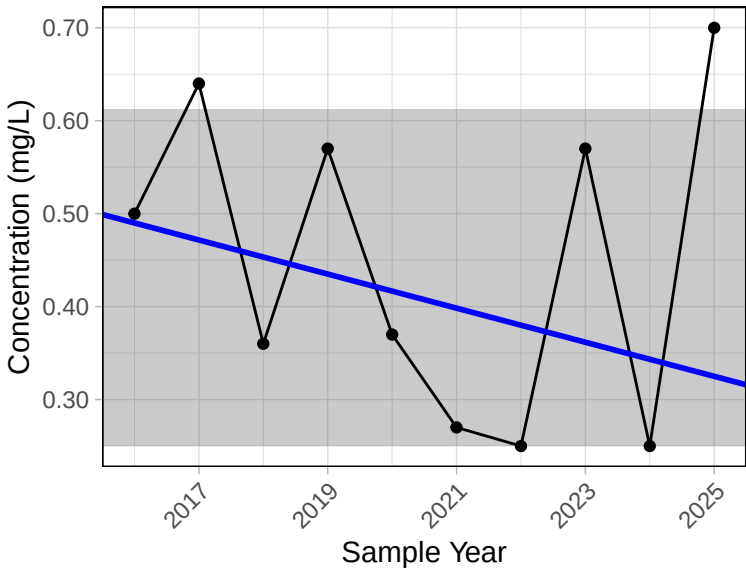
Chrystina Water



Trend significance p-value = 0.107

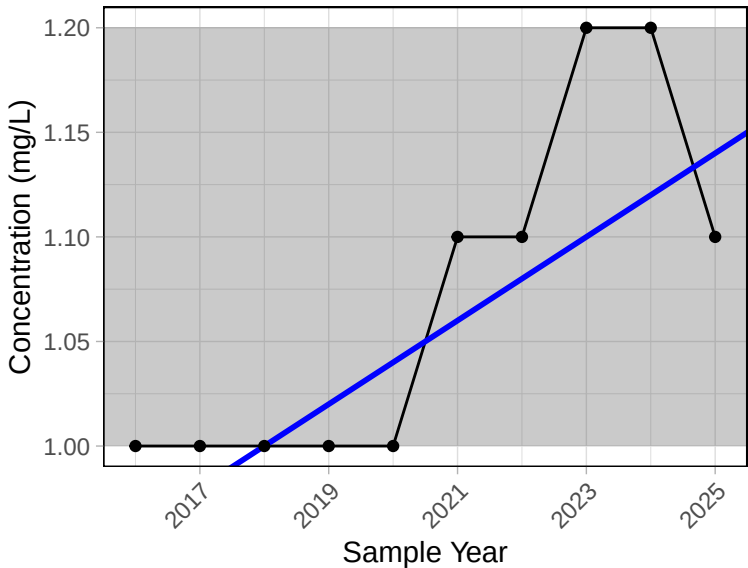
Silicon (total)

Chrystina Water



Trend significance p-value = 0.589

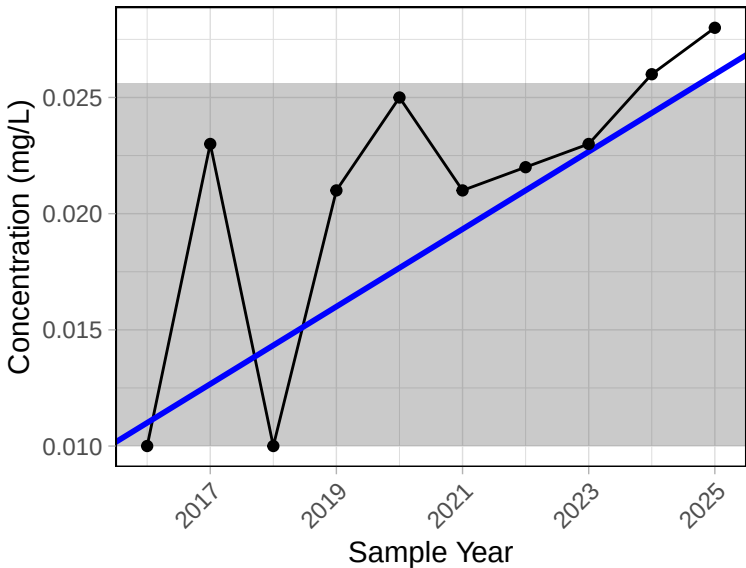
Sodium (total) Chrystina Water



Trend significance p-value = 0.011

Strontium (total)

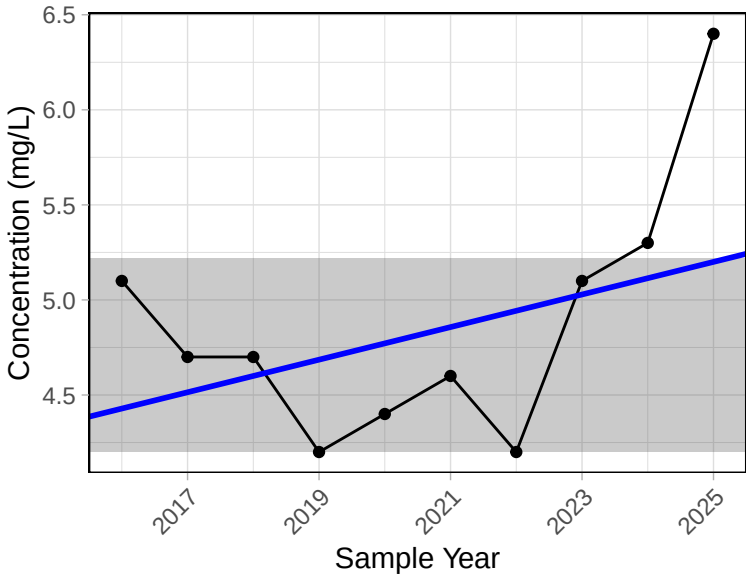
Chrystina Water



Trend significance p -value = 0.015

Calcium (dissolved)

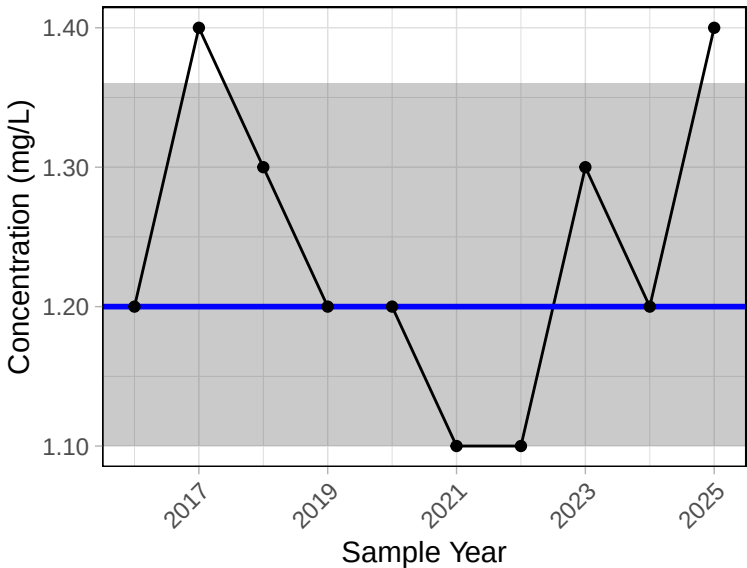
Chrystina Water



Trend significance p-value = 0.415

Magnesium (dissolved)

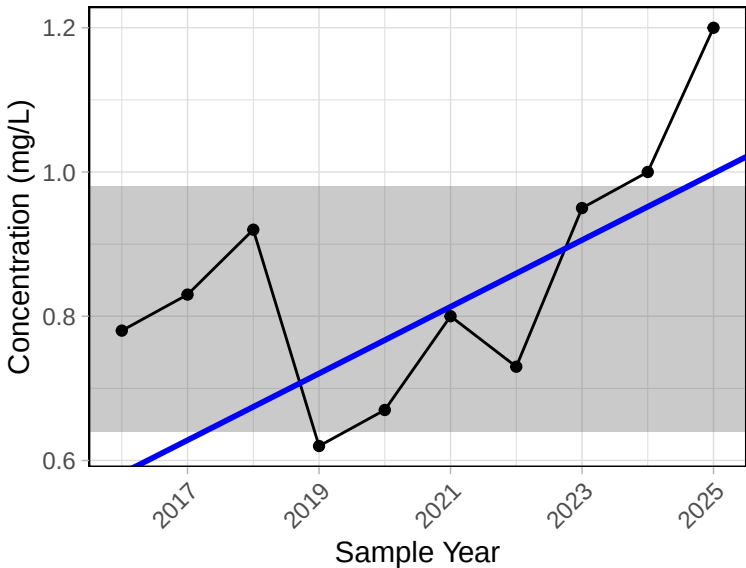
Chrystina Water



Trend significance p-value = 0.925

Potassium (dissolved)

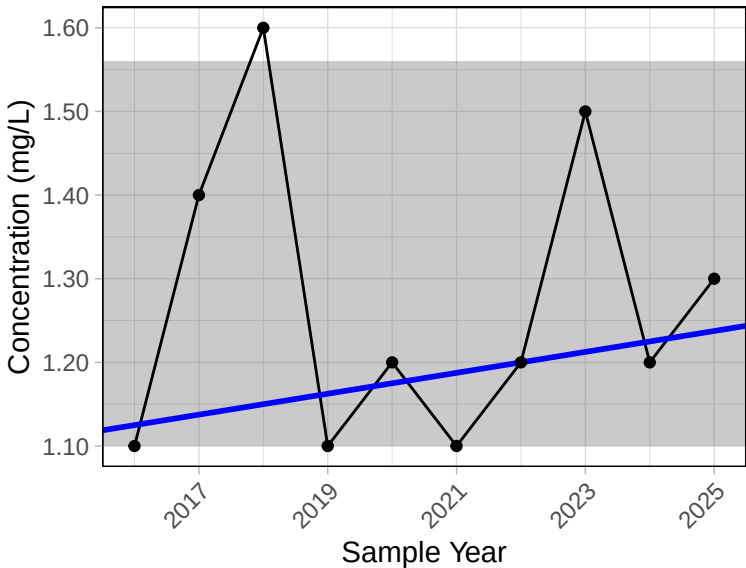
Chrystina Water



Trend significance p-value = 0.074

Sodium (dissolved)

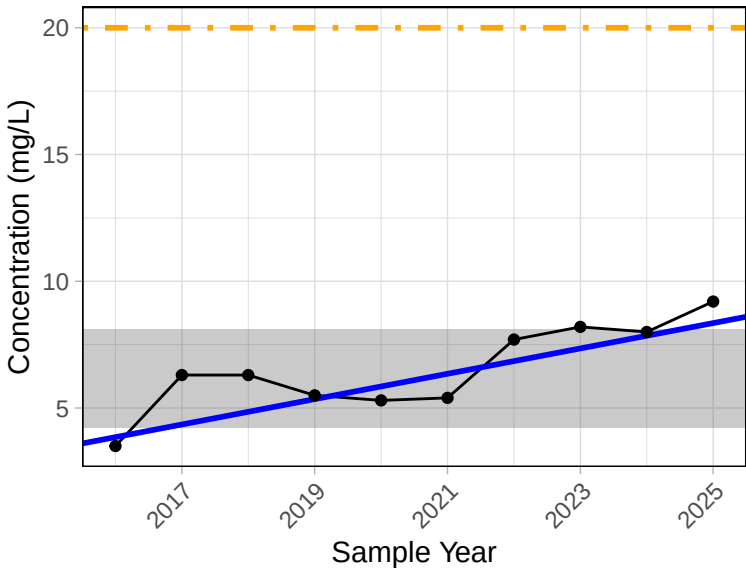
Chrystina Water



Trend significance p-value = 0.58

Total Alkalinity (as CaCO_3)

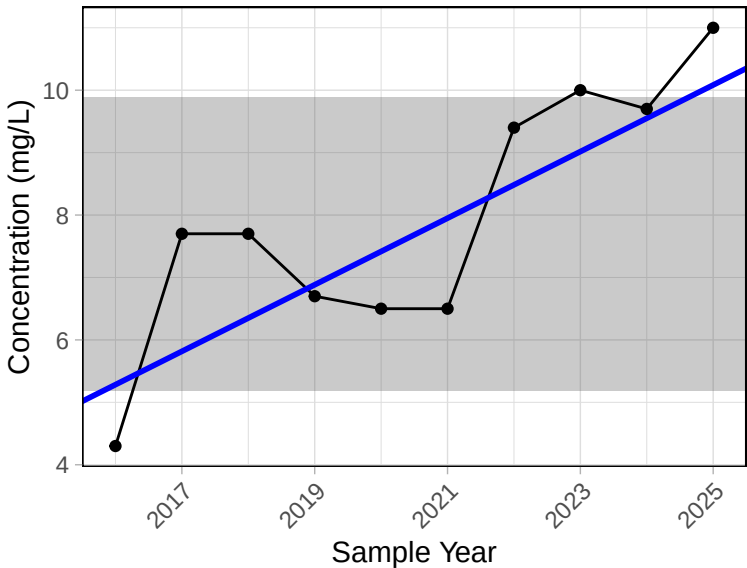
Edith Water



Trend significance p-value = 0.025
Chronic level = 20 mg/L (minimum)

Bicarbonate

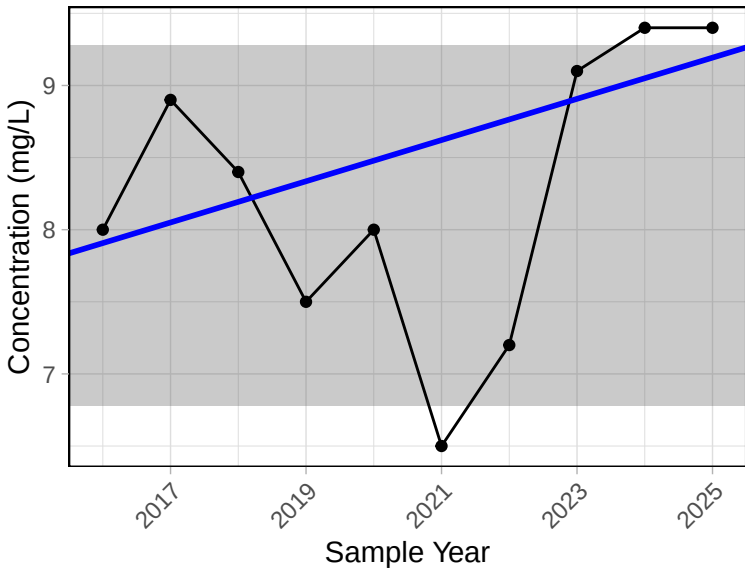
Edith Water



Trend significance p-value = 0.03

Hardness

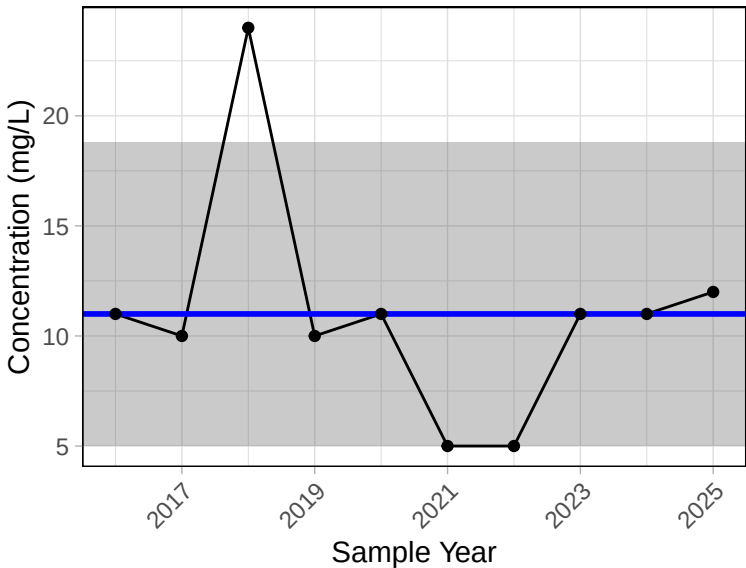
Edith Water



Trend significance p-value = 0.367

Total Dissolved Solids

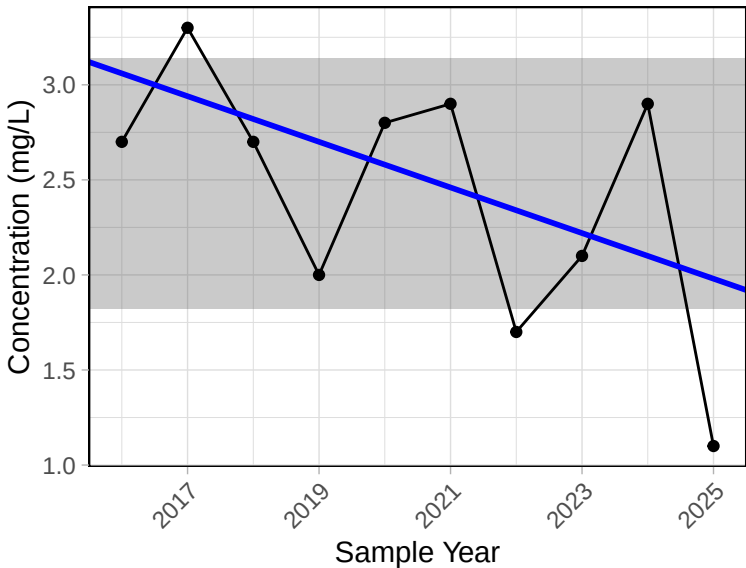
Edith Water



Trend significance p-value = 0.852

Total Suspended Solids

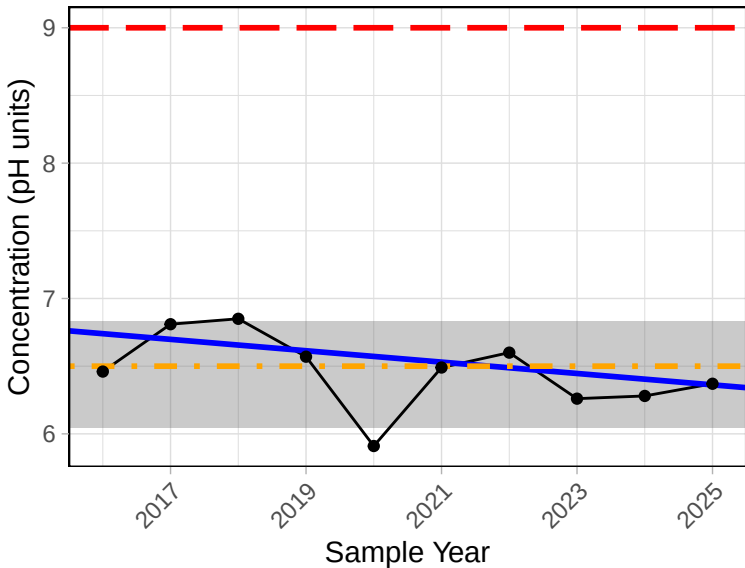
Edith Water



Trend significance p-value = 0.367

pH

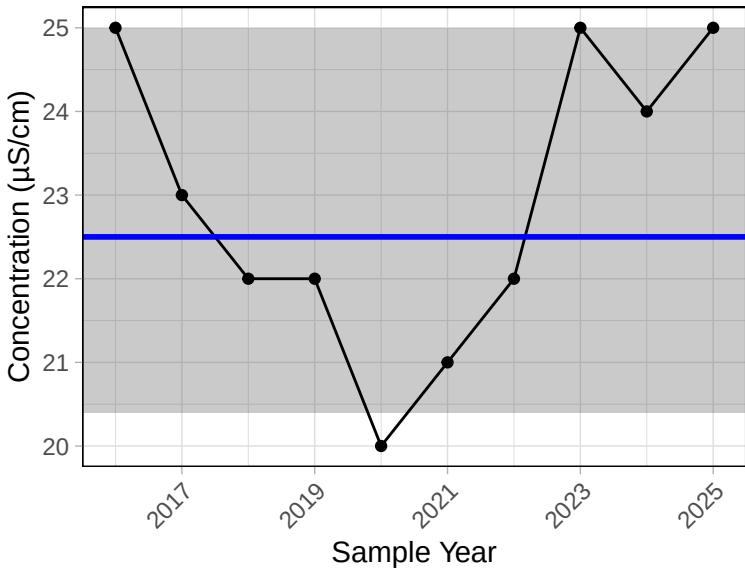
Edith Water



Trend significance p-value = 0.283
Chronic level = 6.5 pH units (minimum)
Acute level = 9 pH units (maximum)

Electrical Conductivity

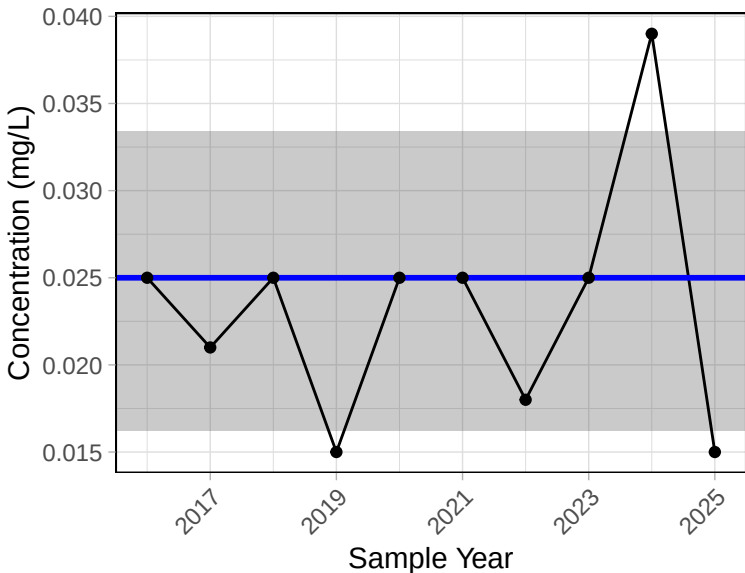
Edith Water



Trend significance p-value = 0.712

Ammonia as Nitrogen (total)

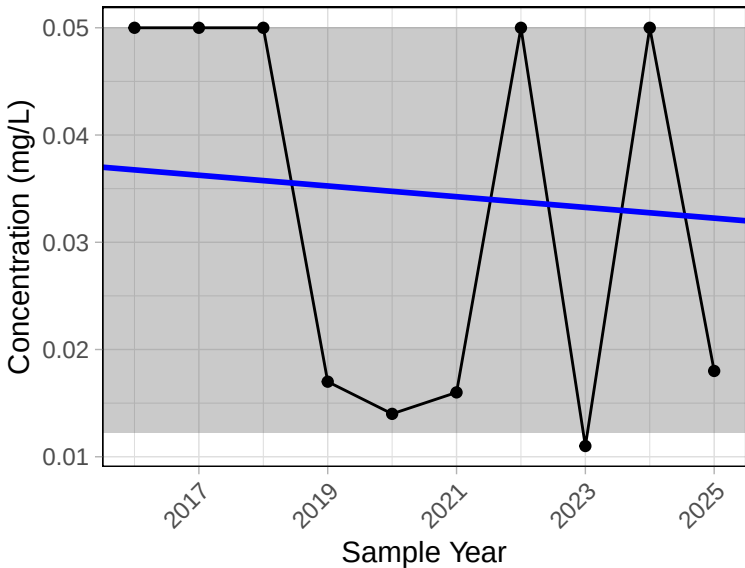
Edith Water



Trend significance p-value = 1

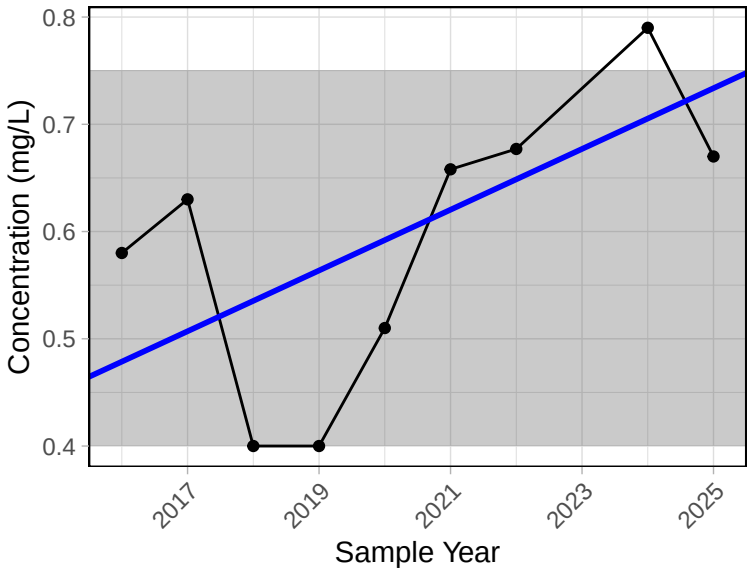
Phosphorus (total)

Edith Water



Total Kjeldahl Nitrogen

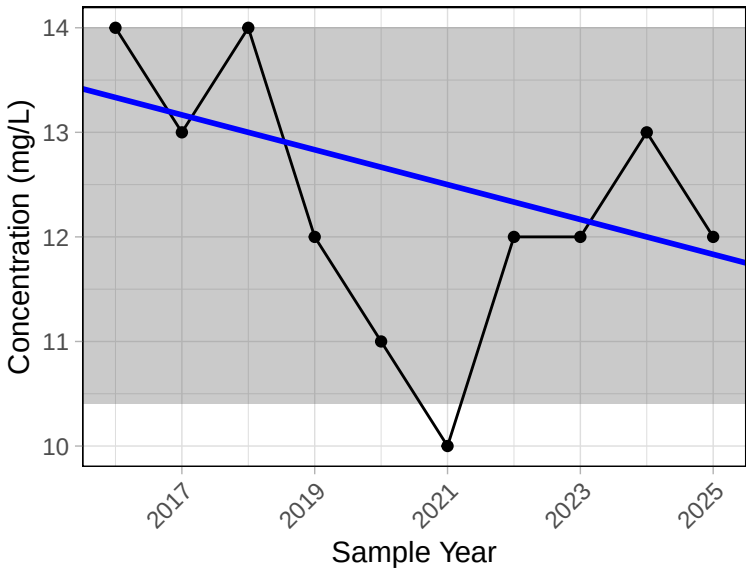
Edith Water



Trend significance p-value = 0.059

Total Organic Carbon

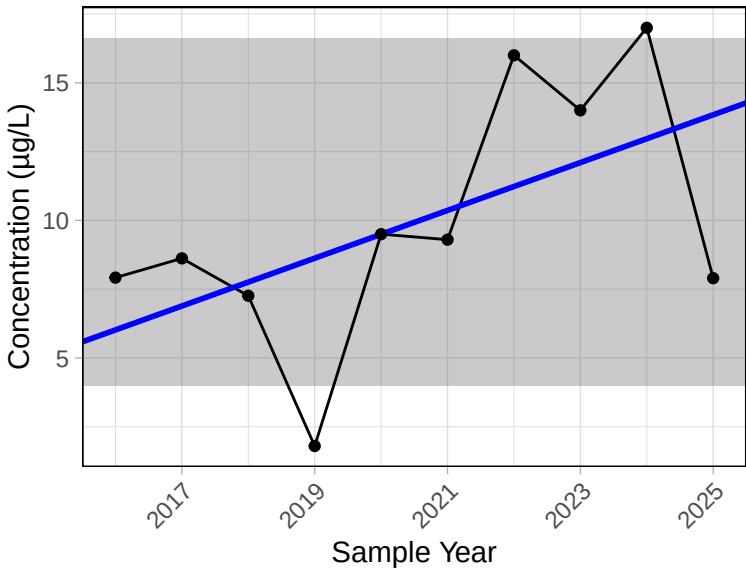
Edith Water



Trend significance p-value = 0.262

Chlorophyll a

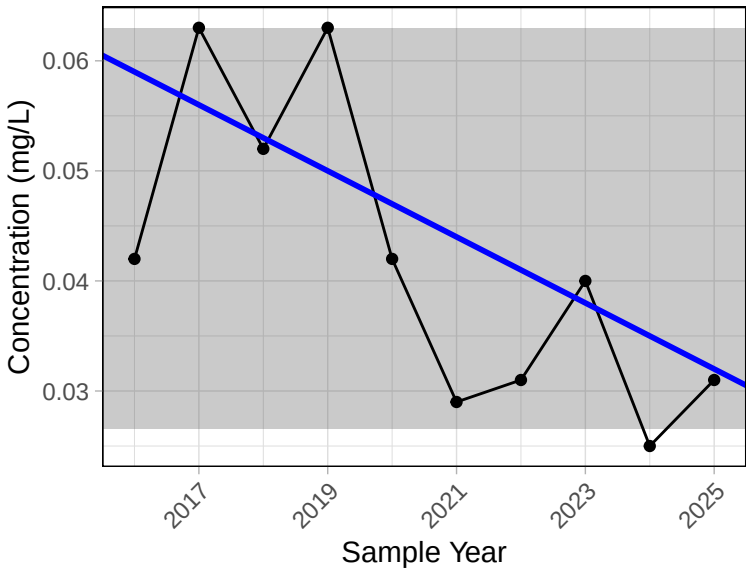
Edith Water



Trend significance p-value = 0.152

Aluminum (total)

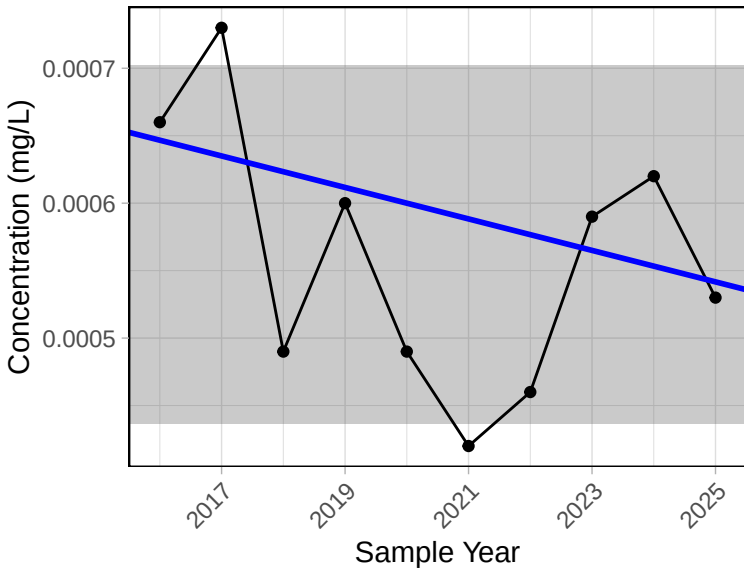
Edith Water



Trend significance p-value = 0.037

Arsenic (total)

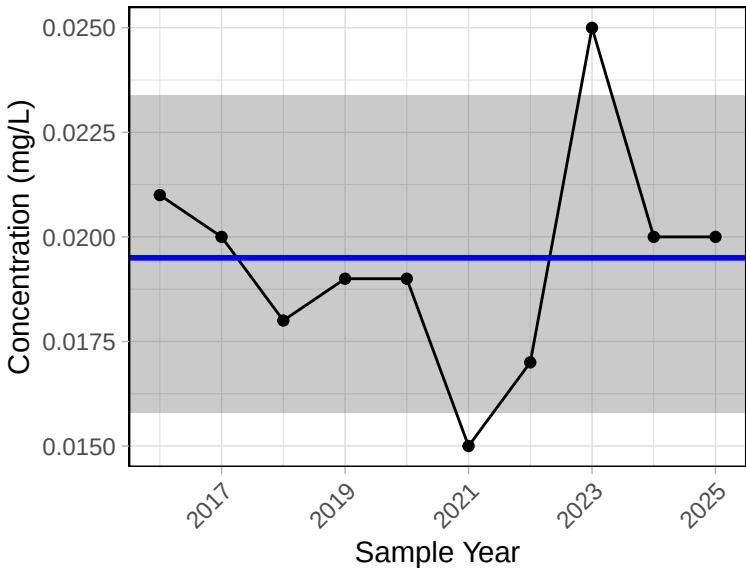
Edith Water



Trend significance p-value = 0.419
Chronic level = 0.005 mg/L (maximum)

Barium (total)

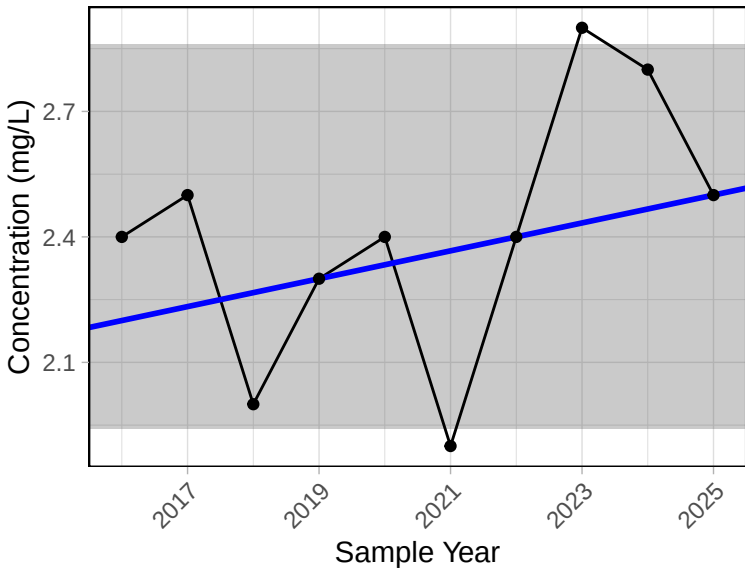
Edith Water



Trend significance p-value = 1

Calcium (total)

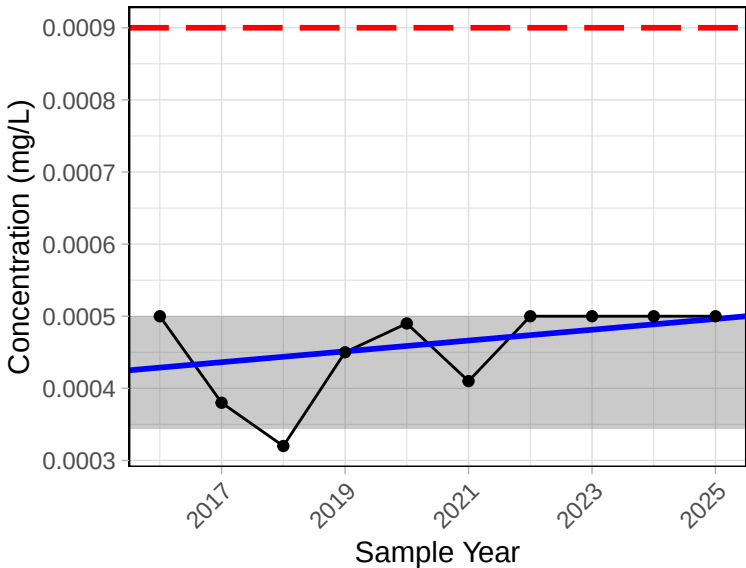
Edith Water



Trend significance p-value = 0.274

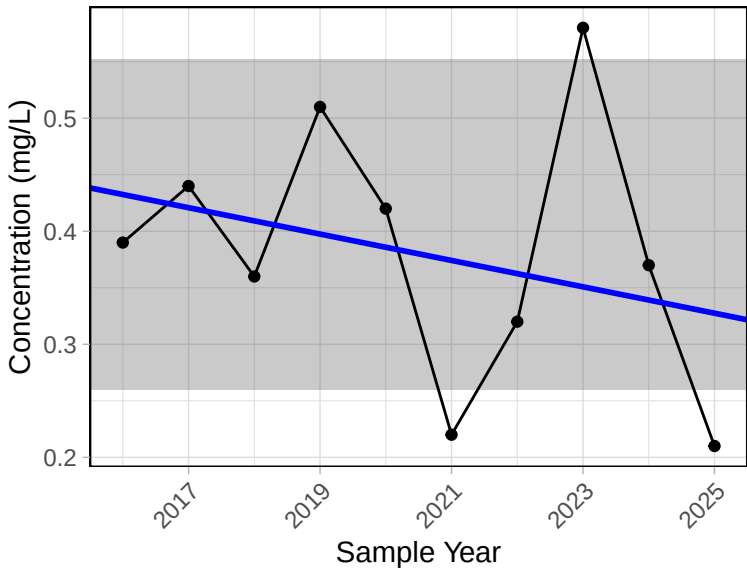
Copper (total)

Edith Water



Iron (total)

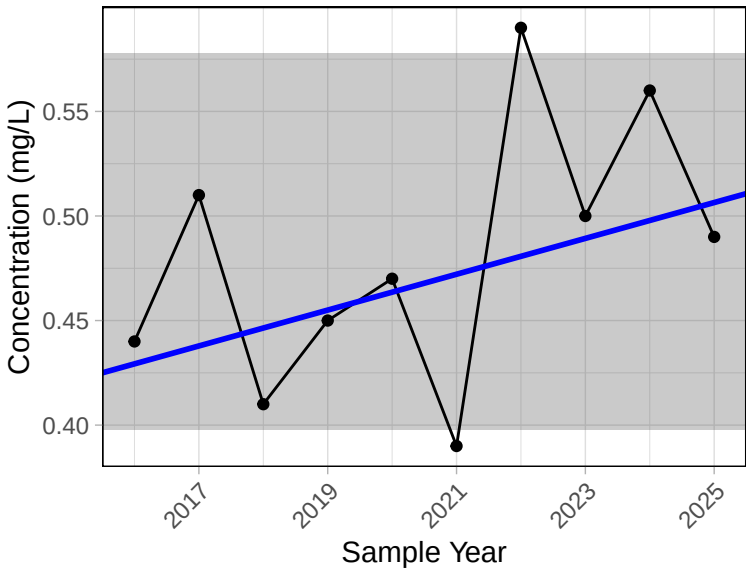
Edith Water



Trend significance p-value = 0.371

Magnesium (total)

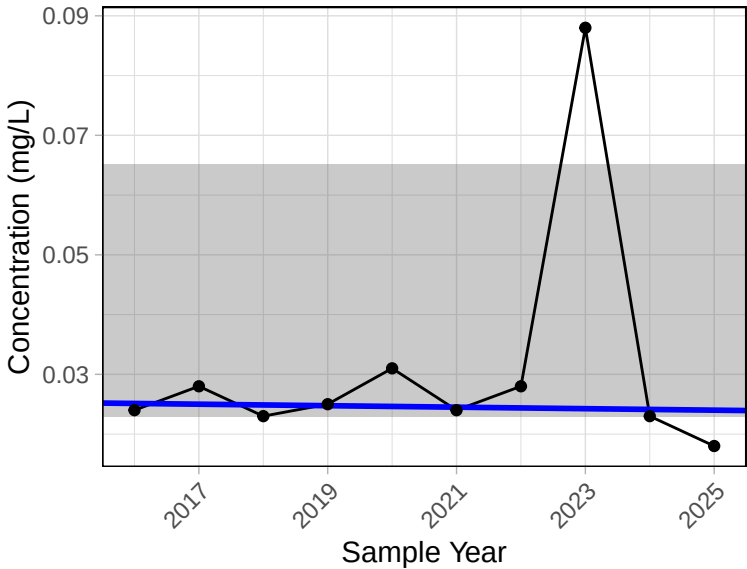
Edith Water



Trend significance p-value = 0.283

Manganese (total)

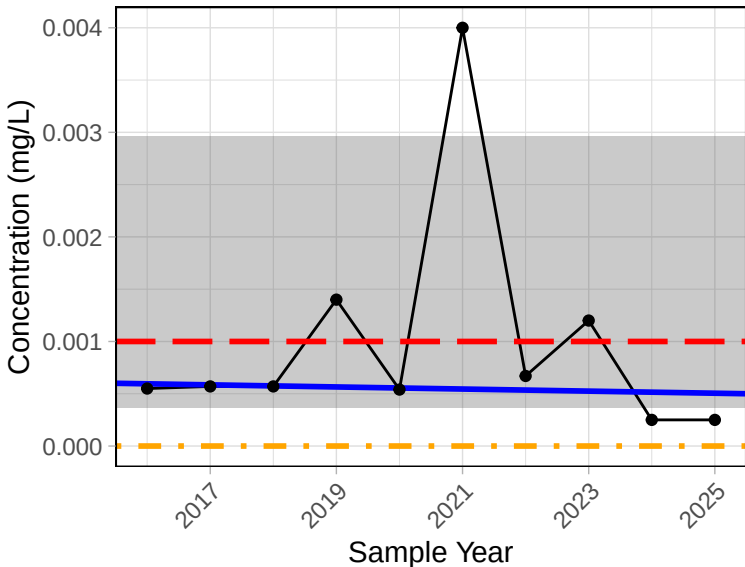
Edith Water



Trend significance p-value = 0.786

Nickel (total)

Edith Water



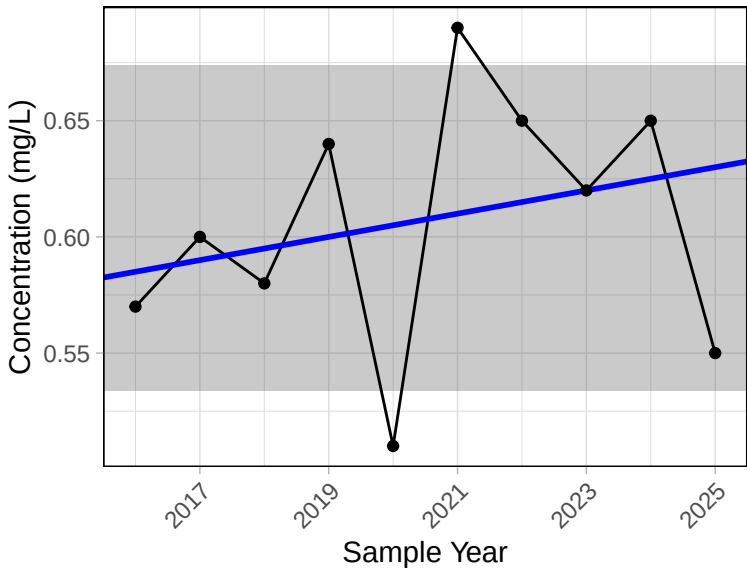
Trend significance p-value = 0.718

Chronic level = 0 mg/L

Acute level = 0.001 mg/L

Potassium (total)

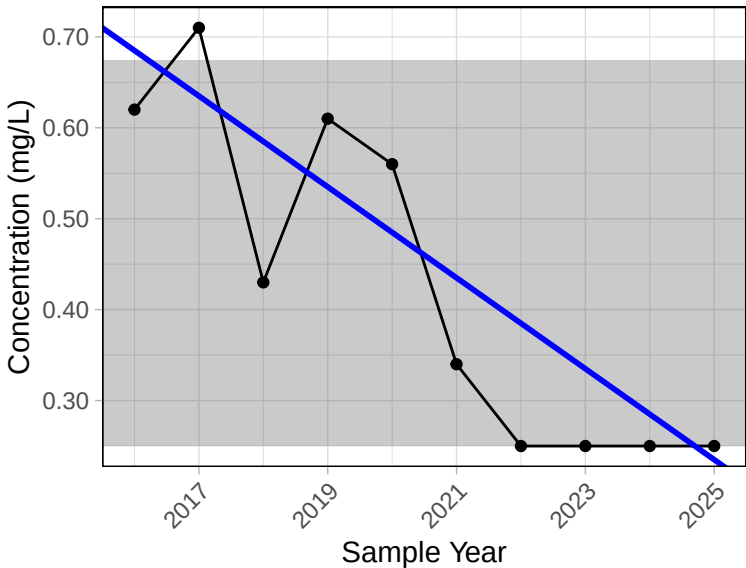
Edith Water



Trend significance p-value = 0.53

Silicon (total)

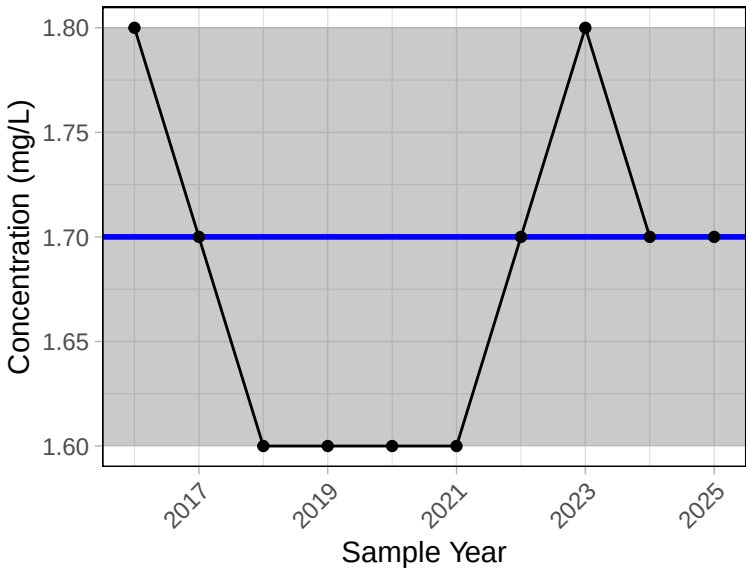
Edith Water



Trend significance p-value = 0.003

Sodium (total)

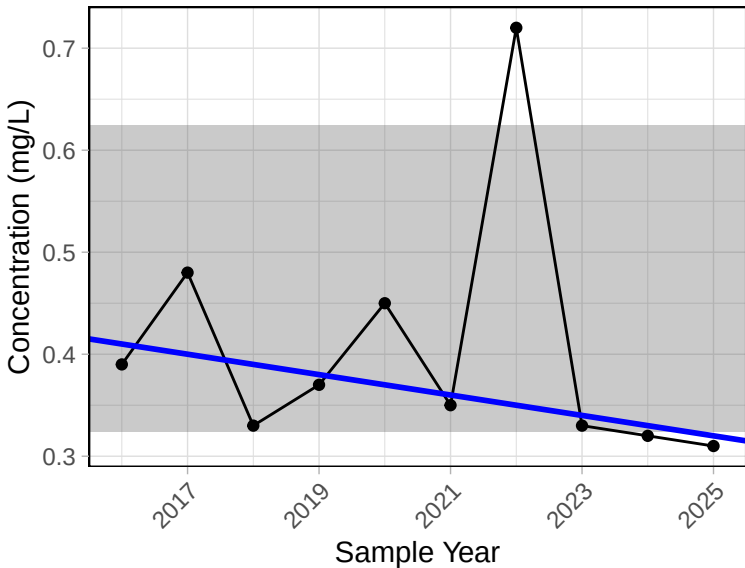
Edith Water



Trend significance p-value = 0.771

Sulphur (total)

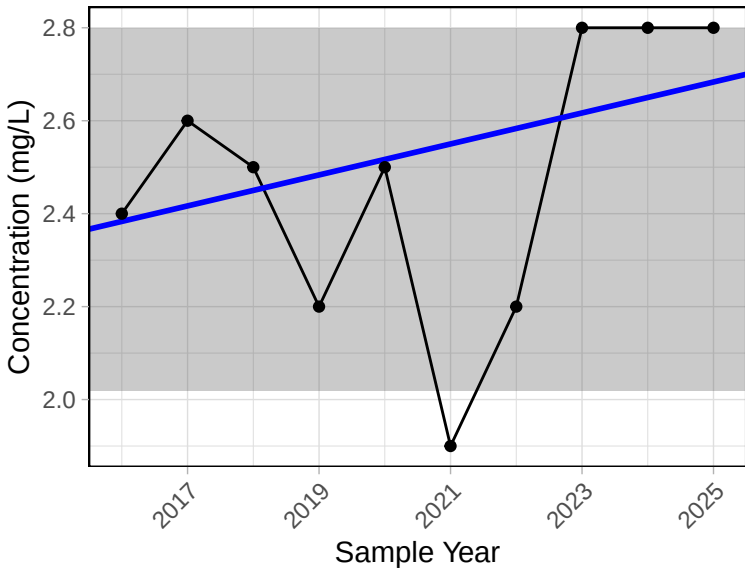
Edith Water



Trend significance p-value = 0.088

Calcium (dissolved)

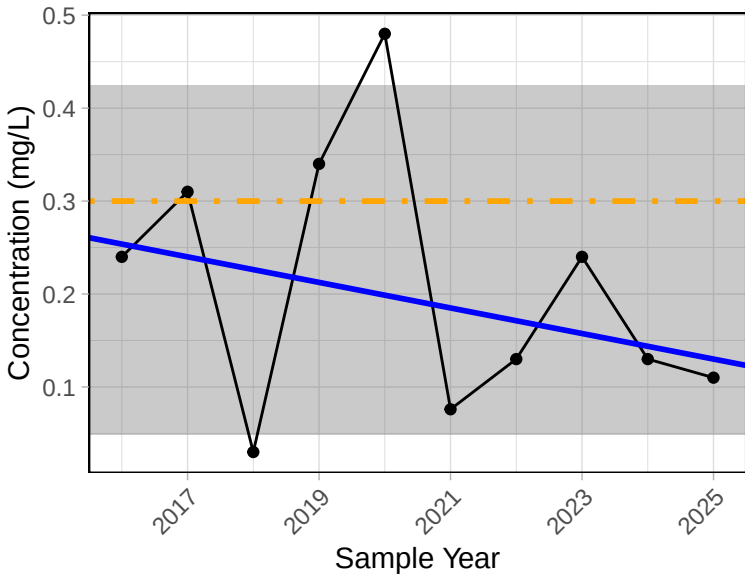
Edith Water



Trend significance p-value = 0.314

Iron (dissolved)

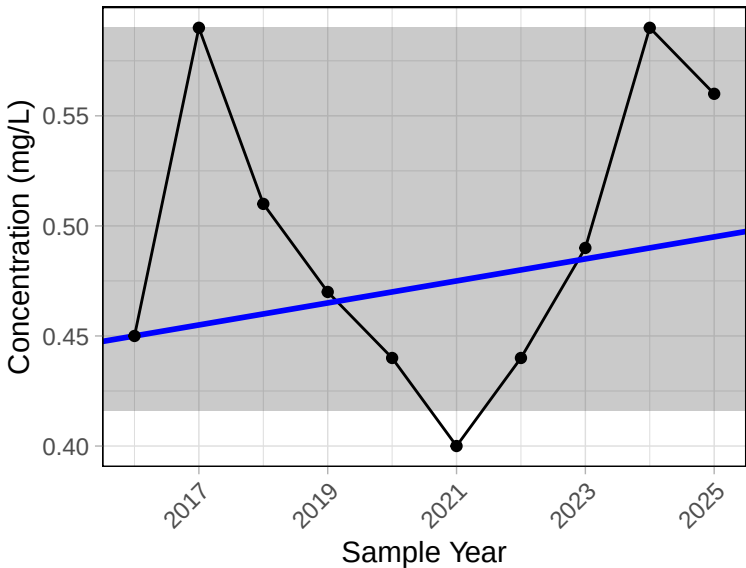
Edith Water



Trend significance p-value = 0.589
Chronic level = 0.3 mg/L (maximum)

Magnesium (dissolved)

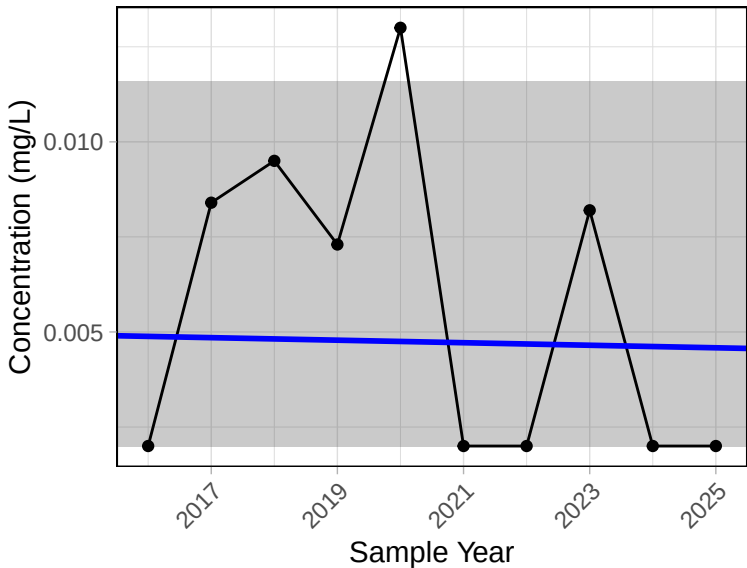
Edith Water



Trend significance p-value = 0.857

Manganese (dissolved)

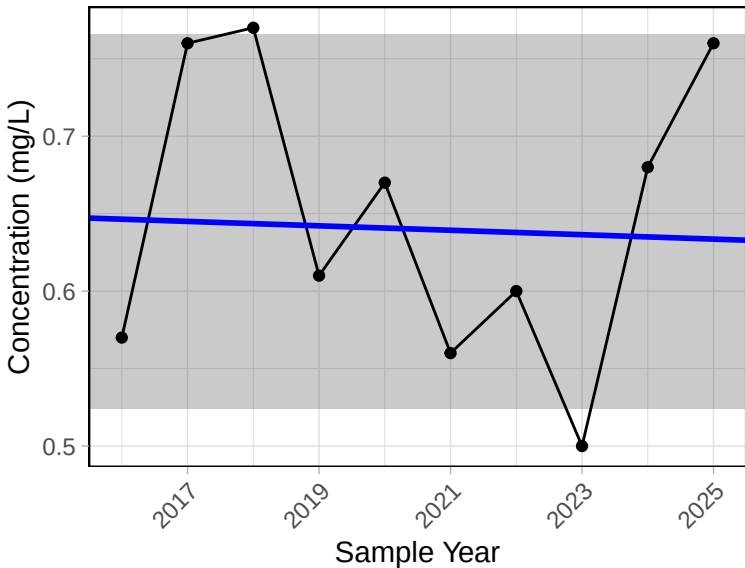
Edith Water



Trend significance p-value = 0.337

Potassium (dissolved)

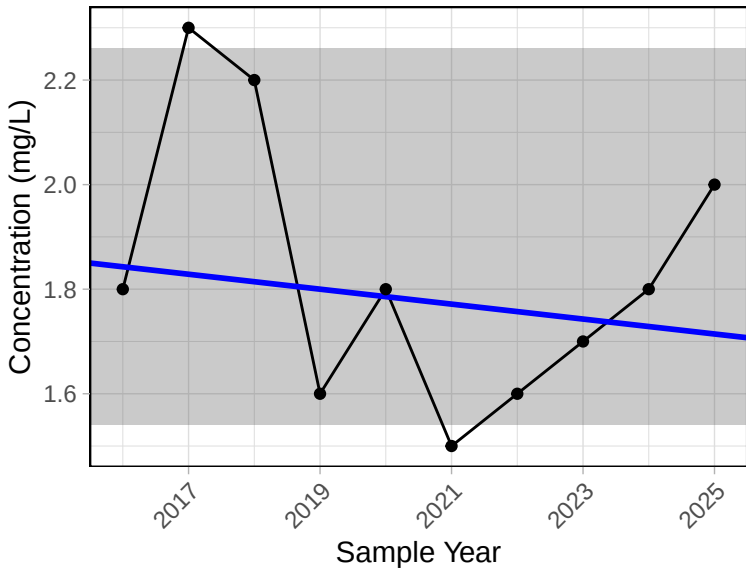
Edith Water



Trend significance p-value = 0.928

Sodium (dissolved)

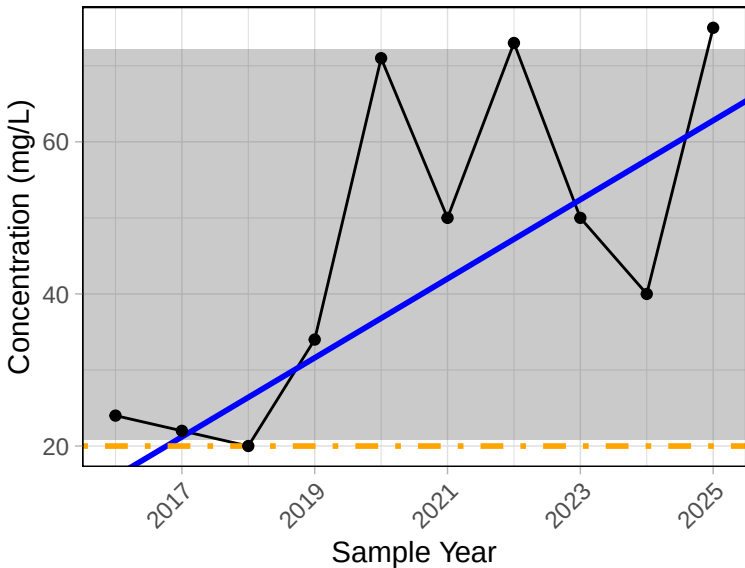
Edith Water



Trend significance p-value = 0.715

Total Alkalinity (as CaCO_3)

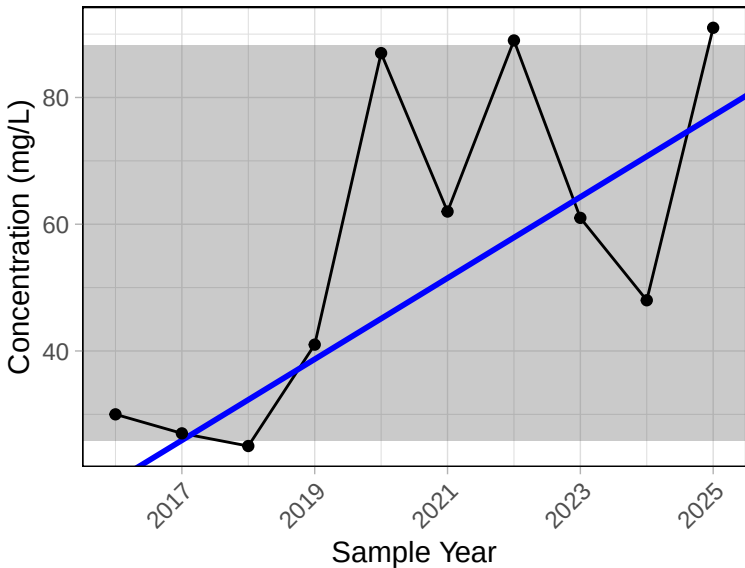
S5A Water



Trend significance p-value = 0.039

Chronic level = 20 mg/L (minimum)

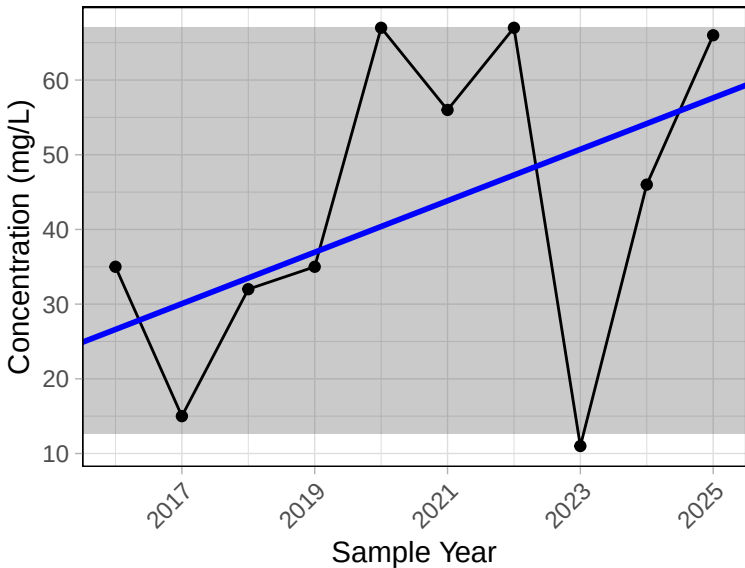
Bicarbonate S5A Water



Trend significance p-value = 0.049

Hardness

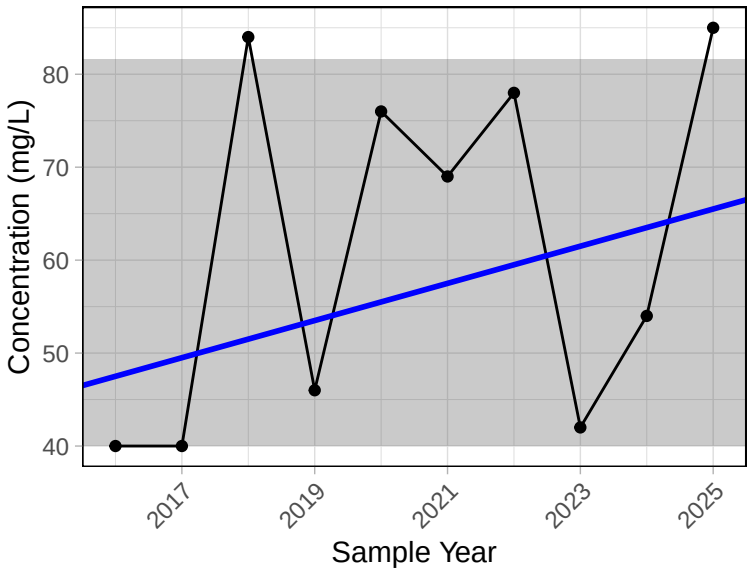
S5A Water



Trend significance p-value = 0.279

Total Dissolved Solids

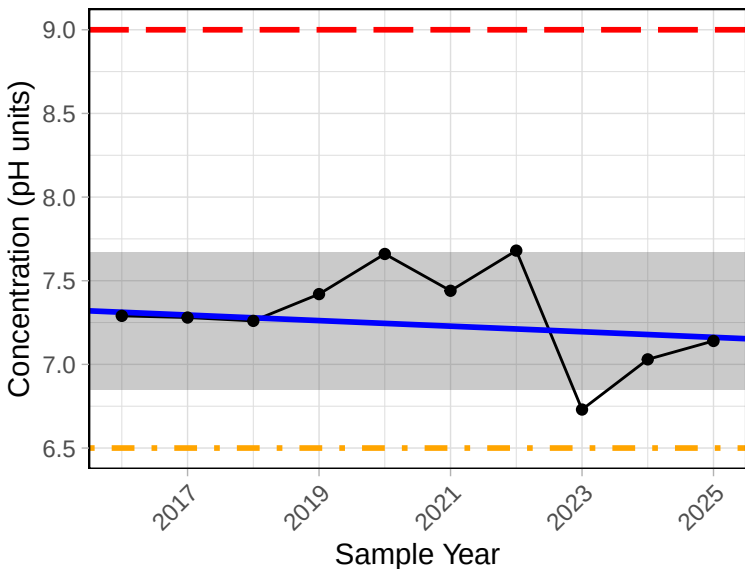
S5A Water



Trend significance p-value = 0.178

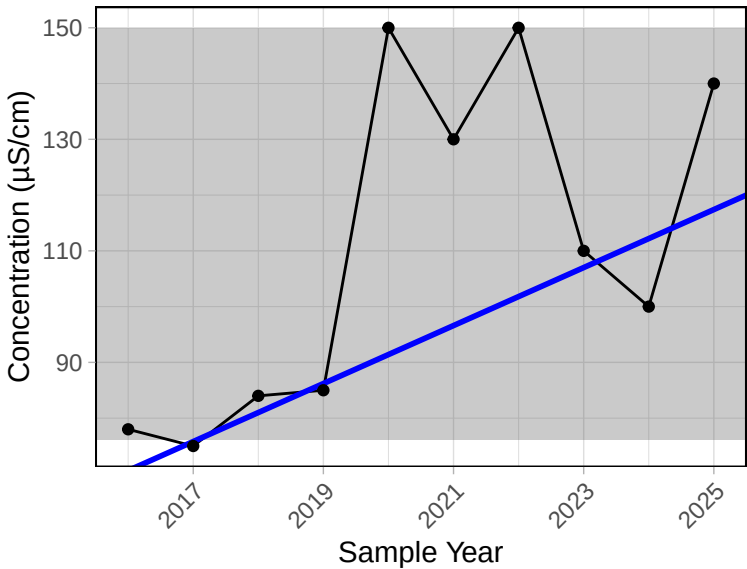
pH

S5A Water



Electrical Conductivity

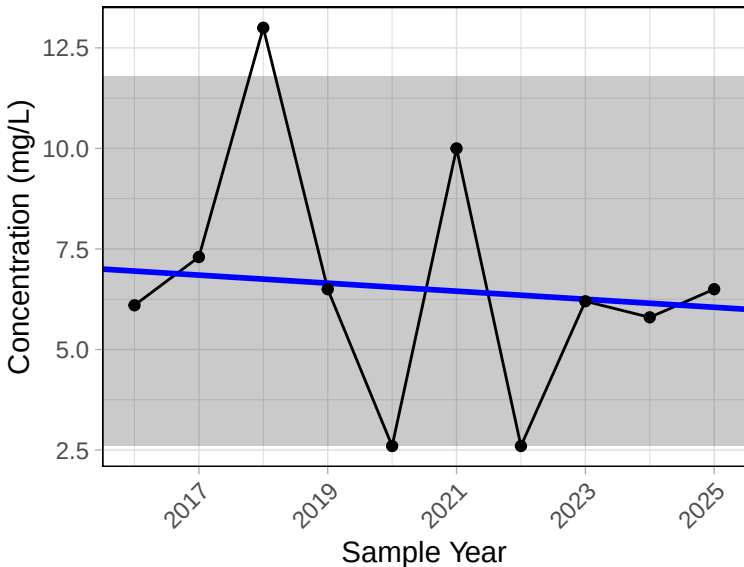
S5A Water



Trend significance p-value = 0.059

Chloride (dissolved)

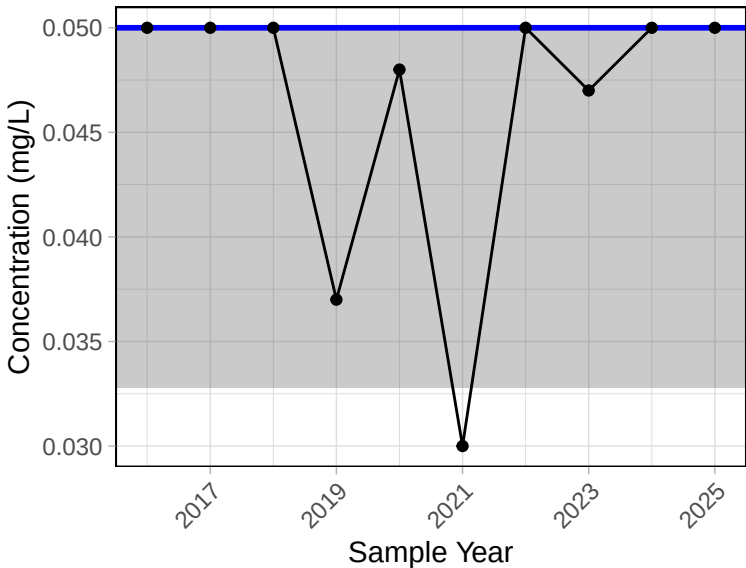
S5A Water



Trend significance p-value = 0.589
Chronic level = 120 mg/L (maximum)
Acute level = 640 mg/L (maximum)

Phosphorus (total)

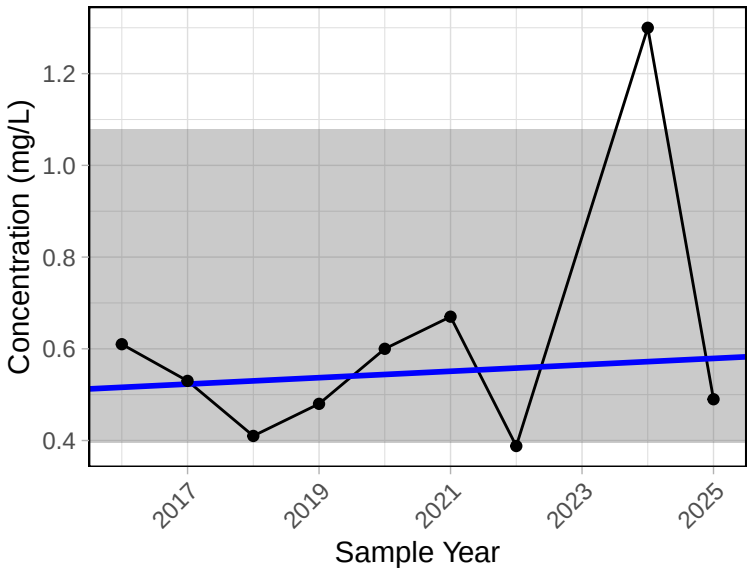
S5A Water



Trend significance p-value = 0.919

Total Kjeldahl Nitrogen

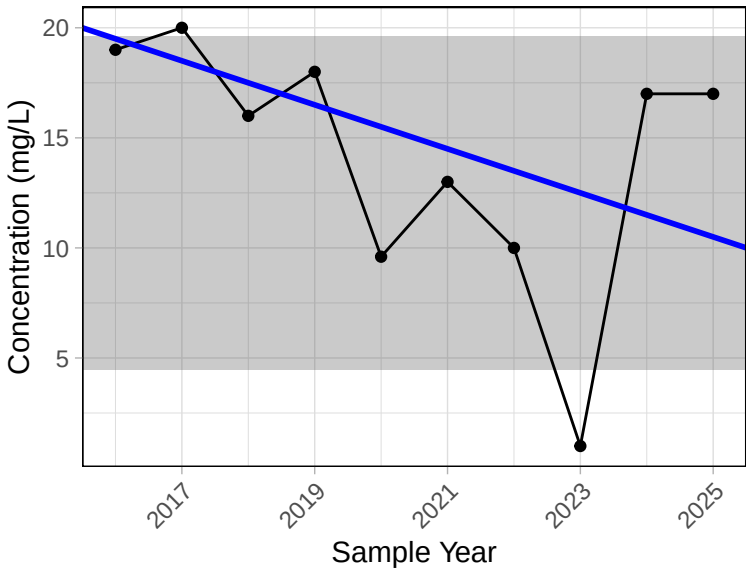
S5A Water



Trend significance p-value = 0.917

Total Organic Carbon

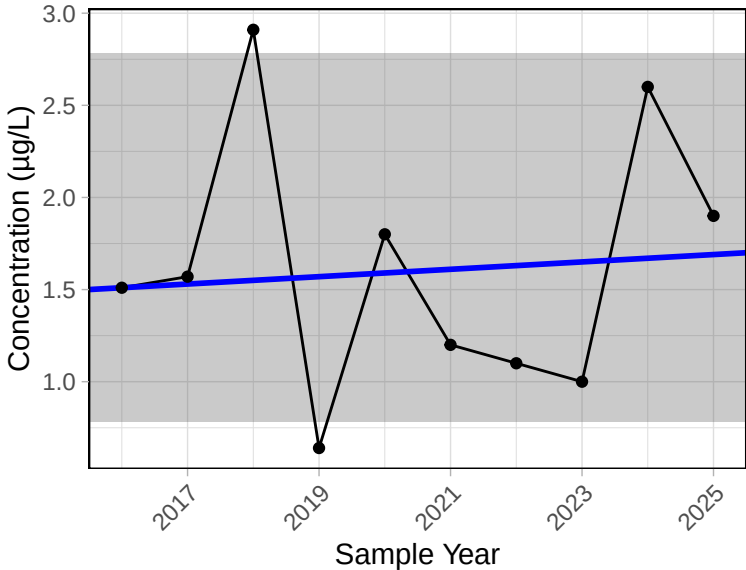
S5A Water



Trend significance p-value = 0.178

Chlorophyll a

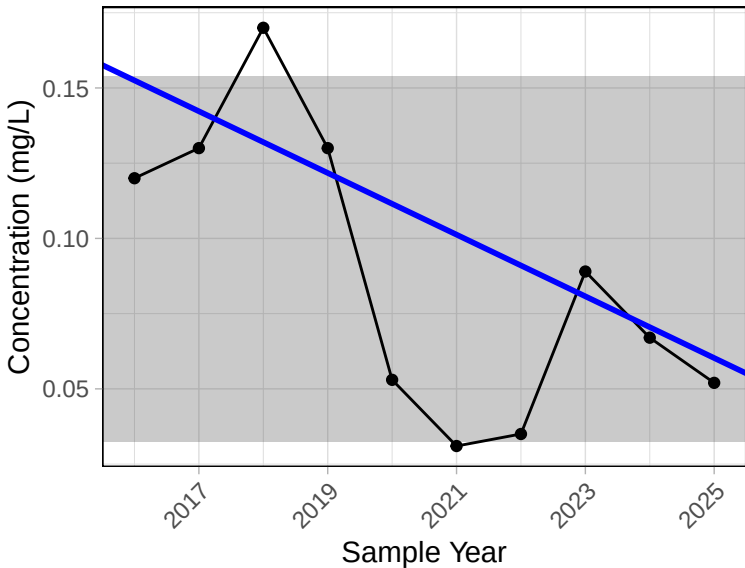
S5A Water



Trend significance p-value = 1

Aluminum (total)

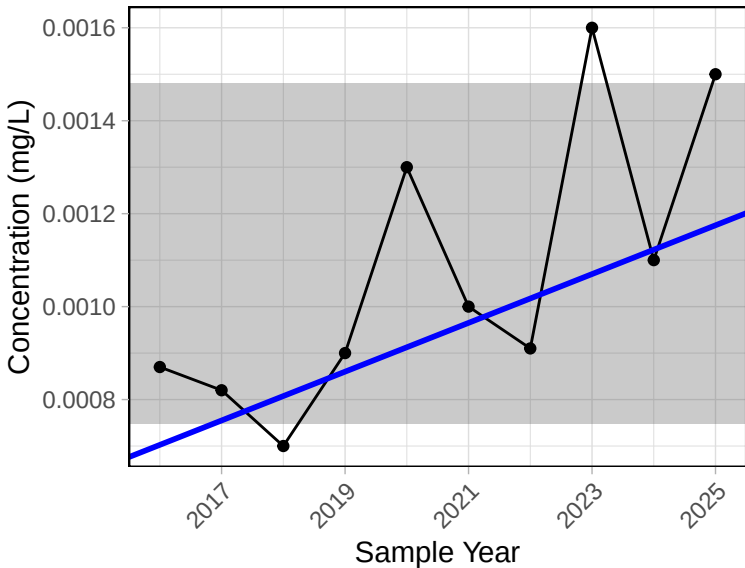
S5A Water



Trend significance p-value = 0.127

Arsenic (total)

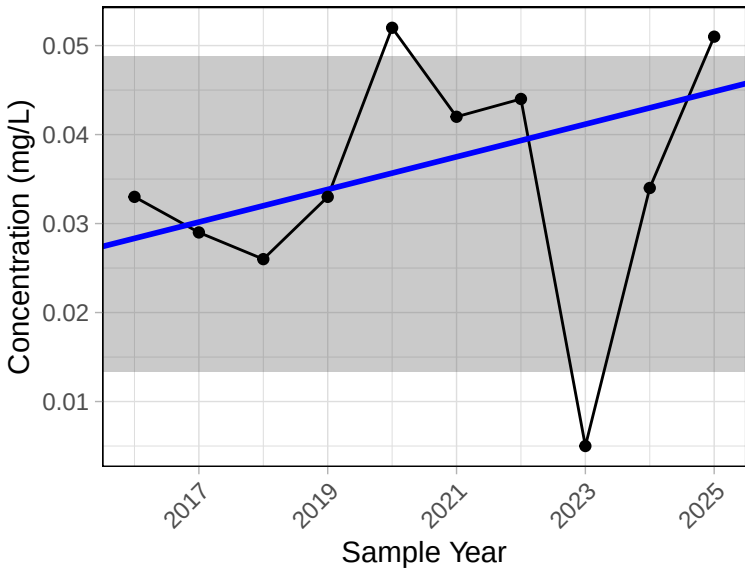
S5A Water



Trend significance p-value = 0.02
Chronic level = 0.005 mg/L (maximum)

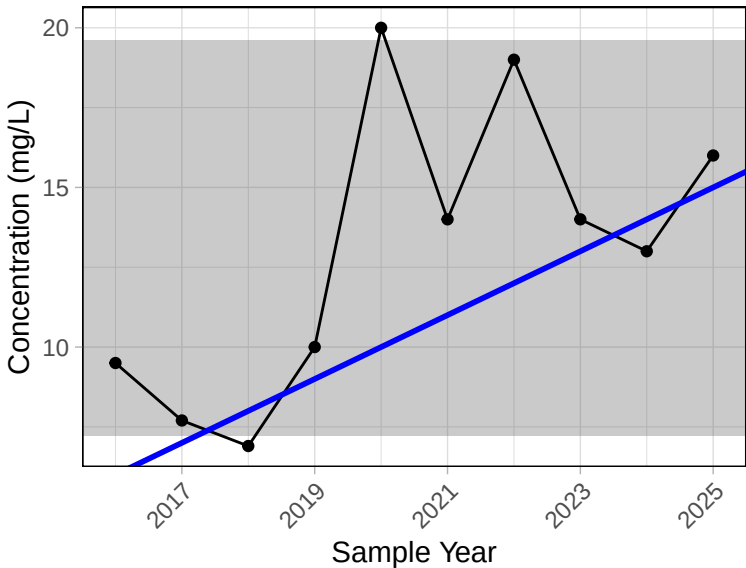
Barium (total)

S5A Water



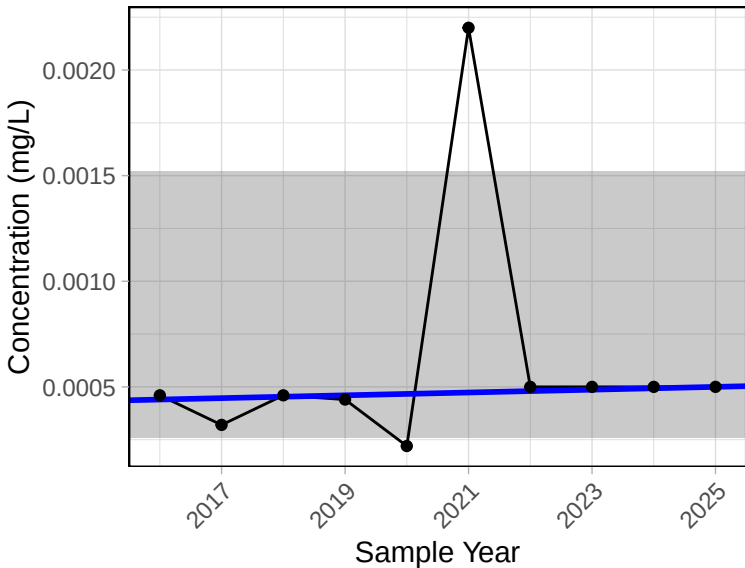
Calcium (total)

S5A Water



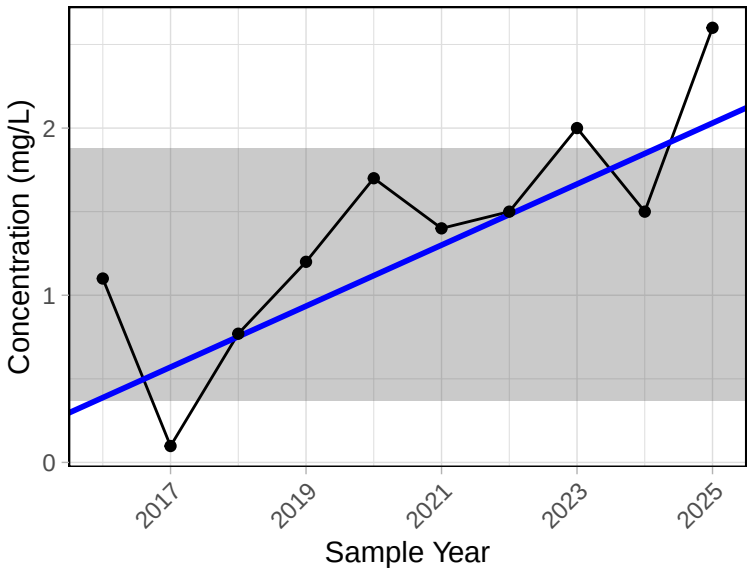
Copper (total)

S5A Water



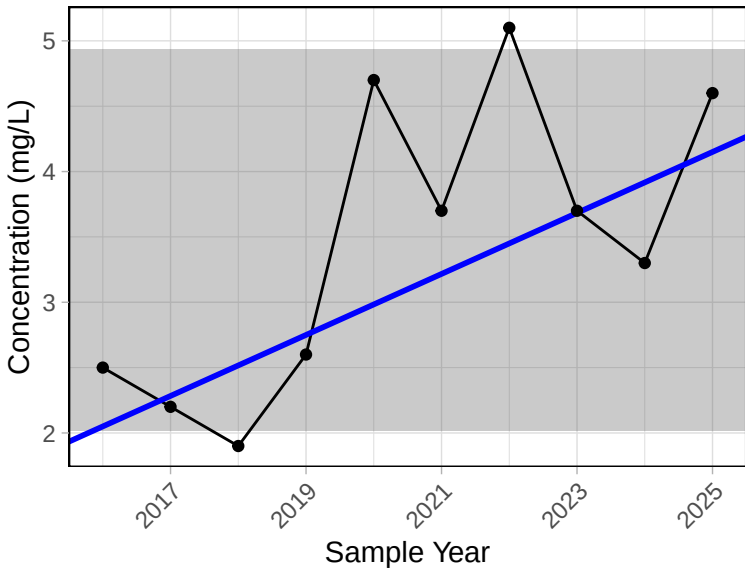
Iron (total)

S5A Water



Magnesium (total)

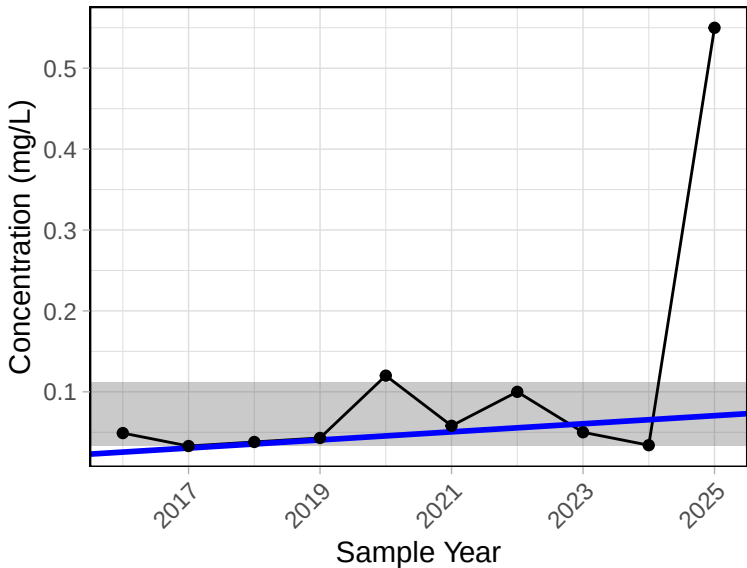
S5A Water



Trend significance p-value = 0.088

Manganese (total)

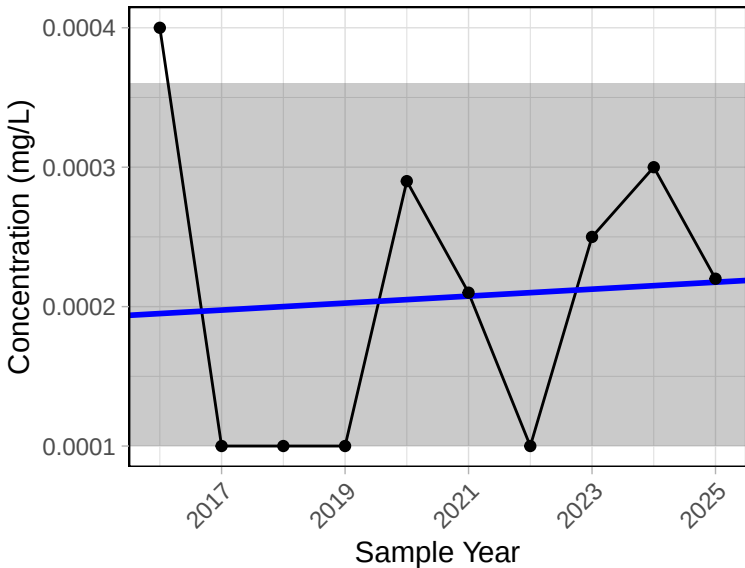
S5A Water



Trend significance p-value = 0.21

Molybdenum (total)

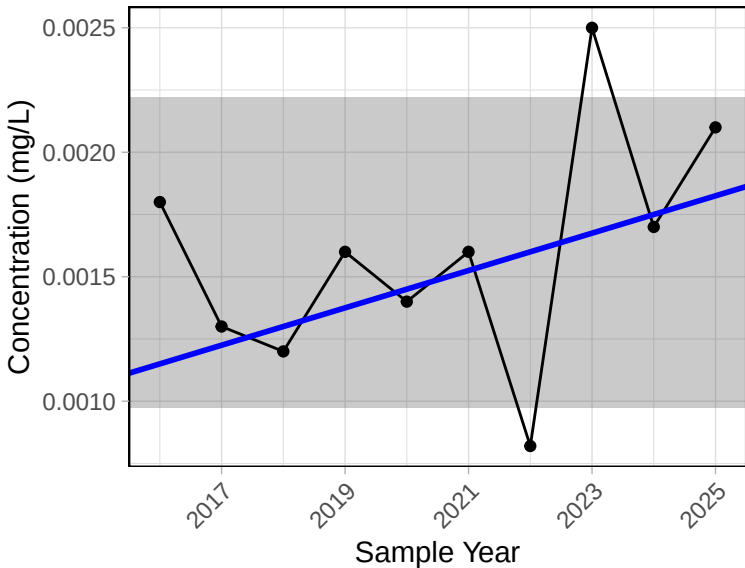
S5A Water



Trend significance p-value = 0.578
Chronic level = 0.073 mg/L (maximum)

Nickel (total)

S5A Water



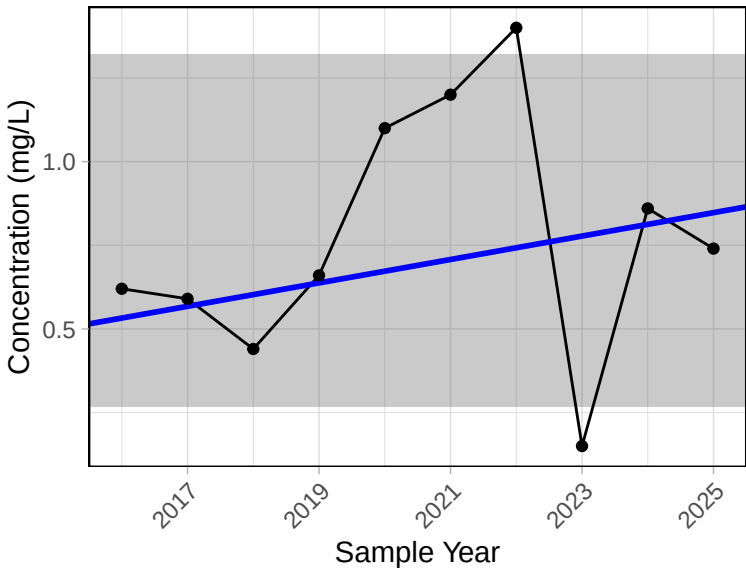
Trend significance p-value = 0.323

Chronic level = 0.036 mg/L

Acute level = 0.33 mg/L

Potassium (total)

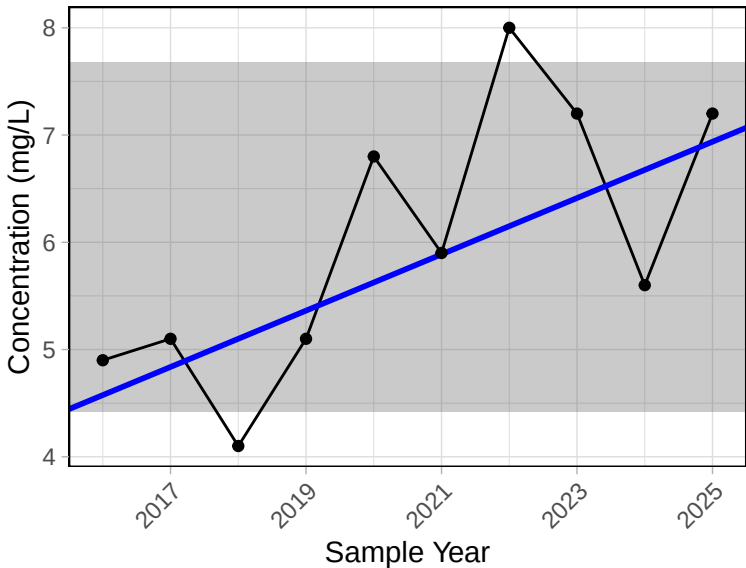
S5A Water



Trend significance p-value = 0.371

Silicon (total)

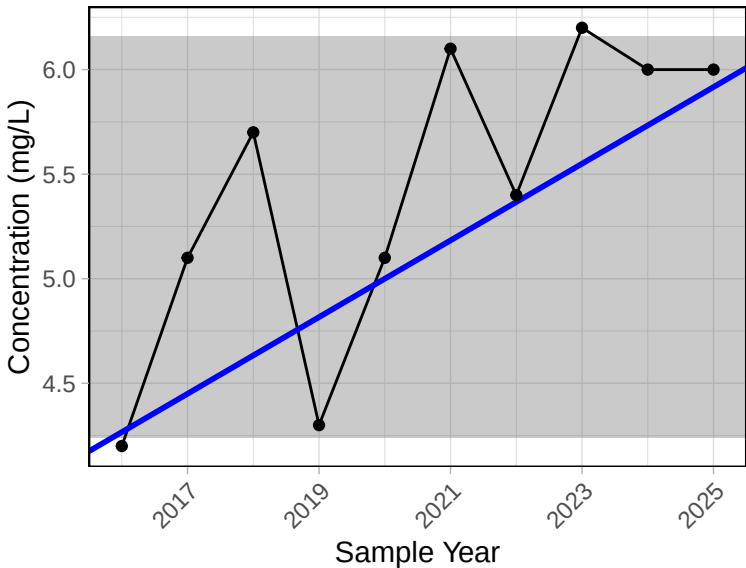
S5A Water



Trend significance p-value = 0.03

Sodium (total)

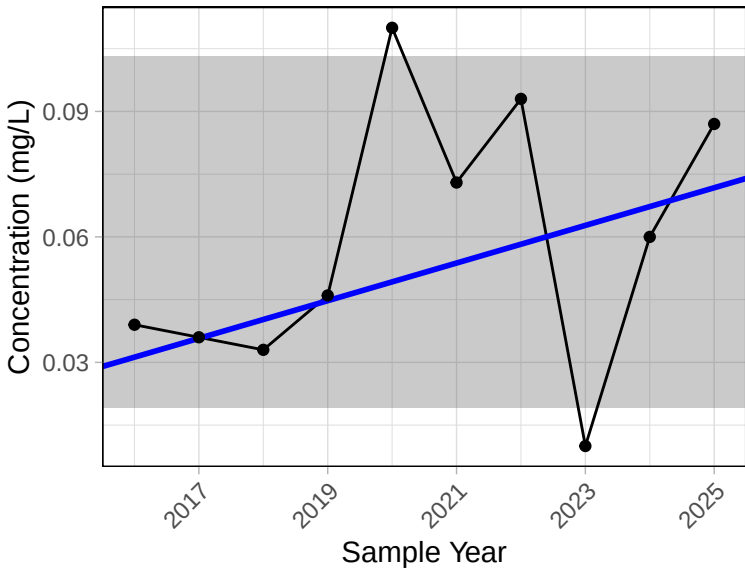
S5A Water



Trend significance p-value = 0.03

Strontium (total)

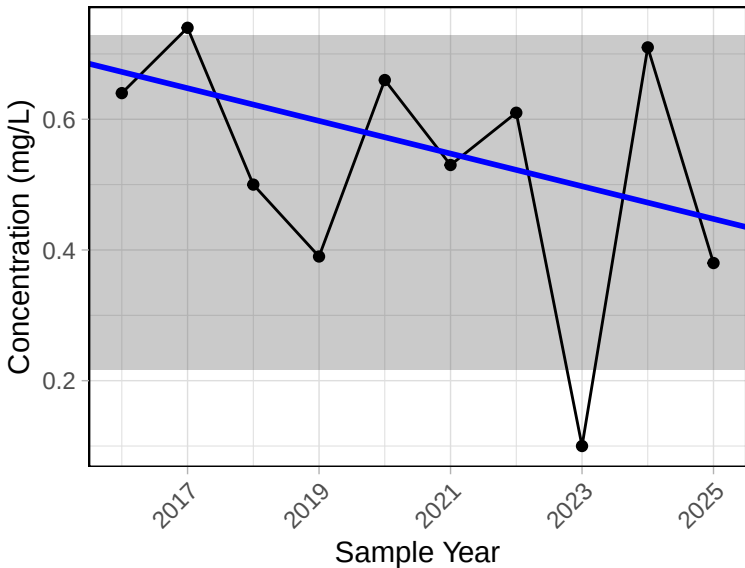
S5A Water



Trend significance p-value = 0.371

Sulphur (total)

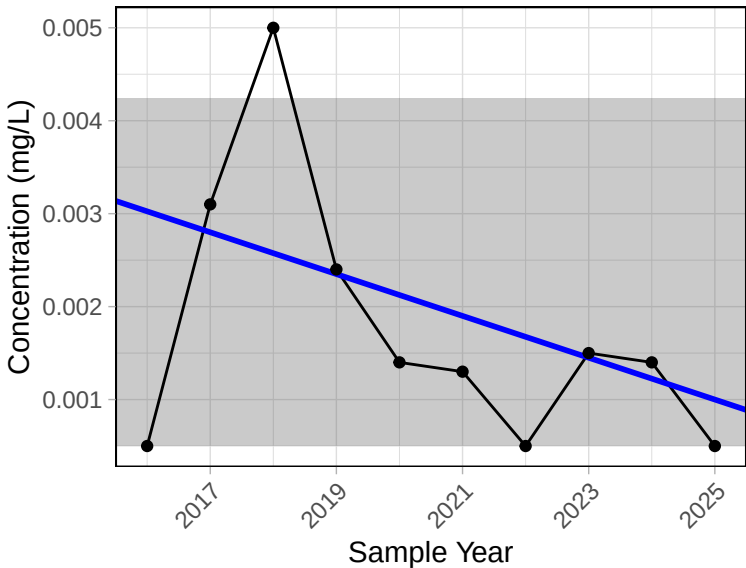
S5A Water



Trend significance p-value = 0.371

Titanium (total)

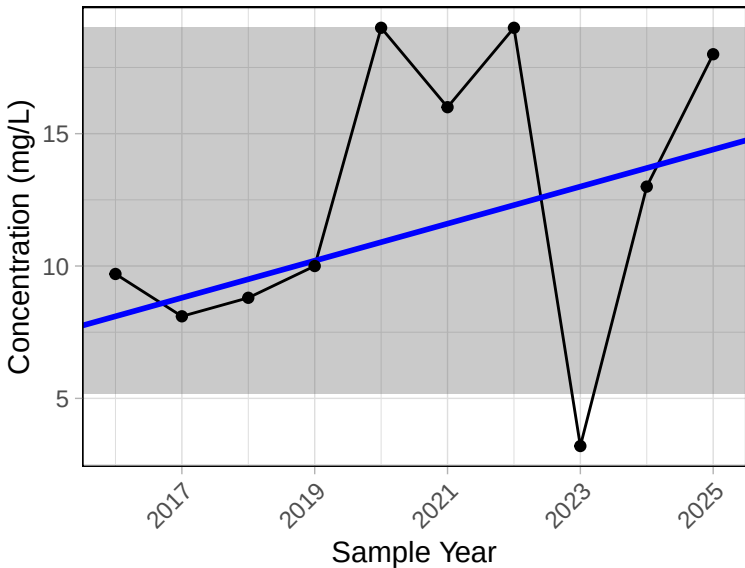
S5A Water



Trend significance p-value = 0.202

Calcium (dissolved)

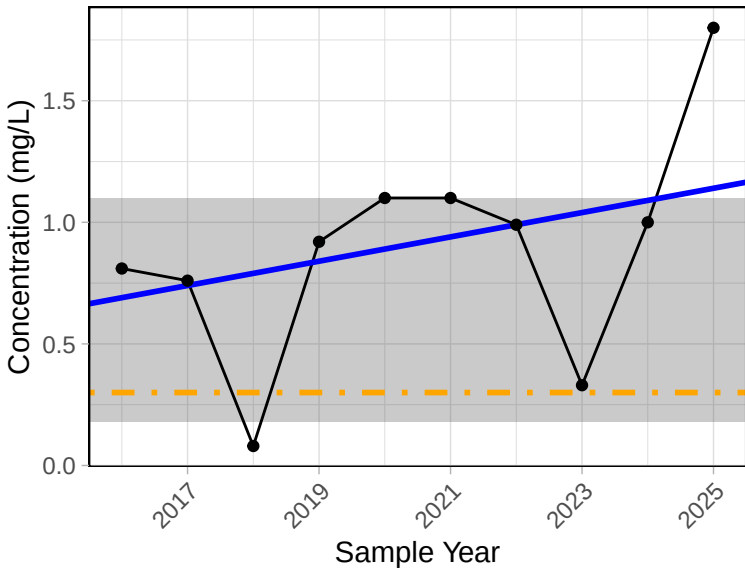
S5A Water



Trend significance p-value = 0.243

Iron (dissolved)

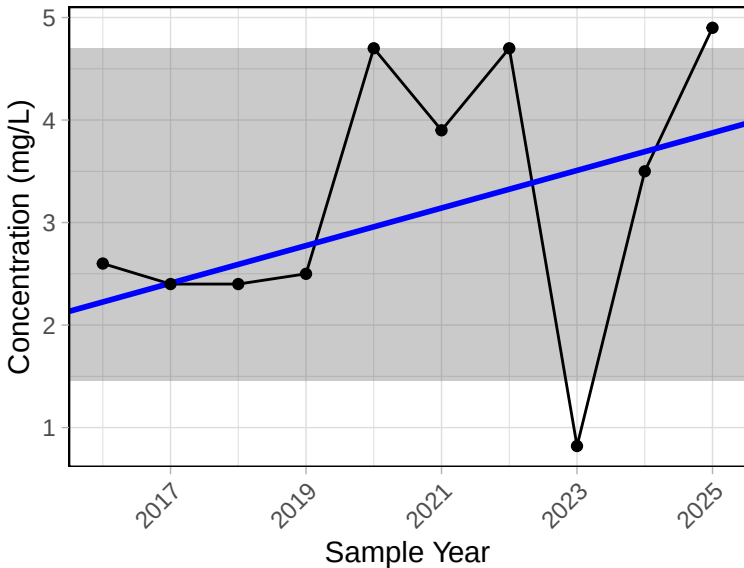
S5A Water



Trend significance p-value = 0.127
Chronic level = 0.3 mg/L (maximum)

Magnesium (dissolved)

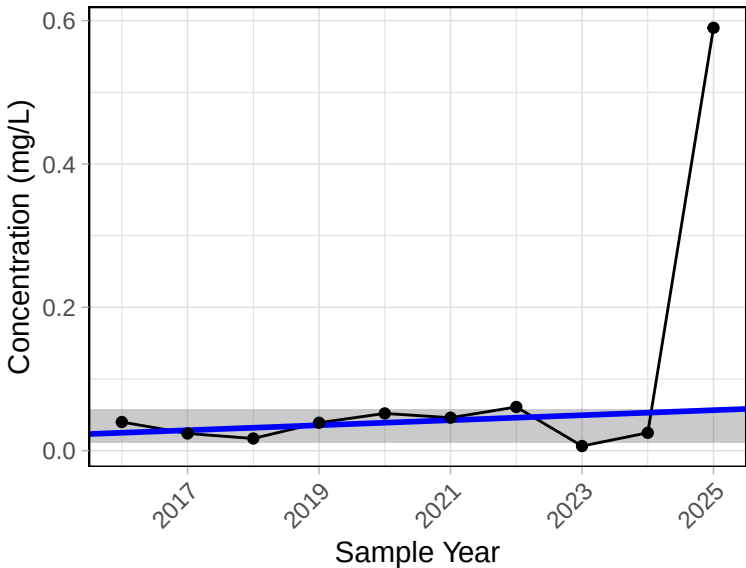
S5A Water



Trend significance p-value = 0.207

Manganese (dissolved)

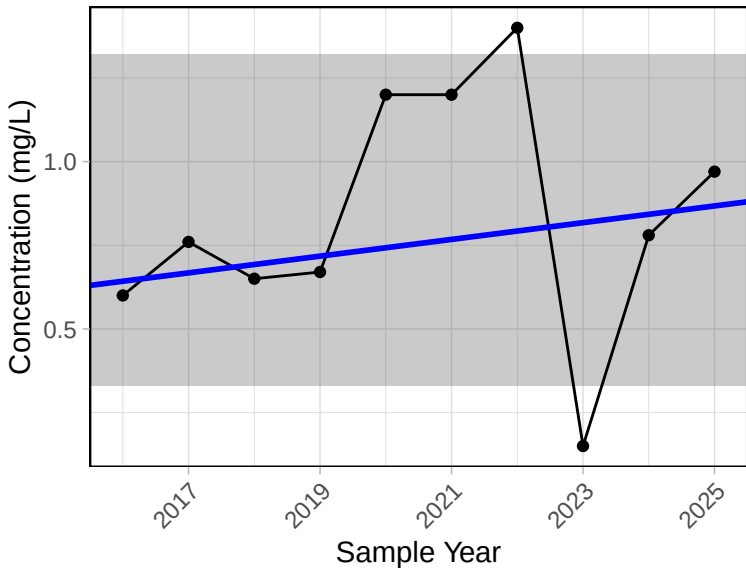
S5A Water



Trend significance p-value = 0.371

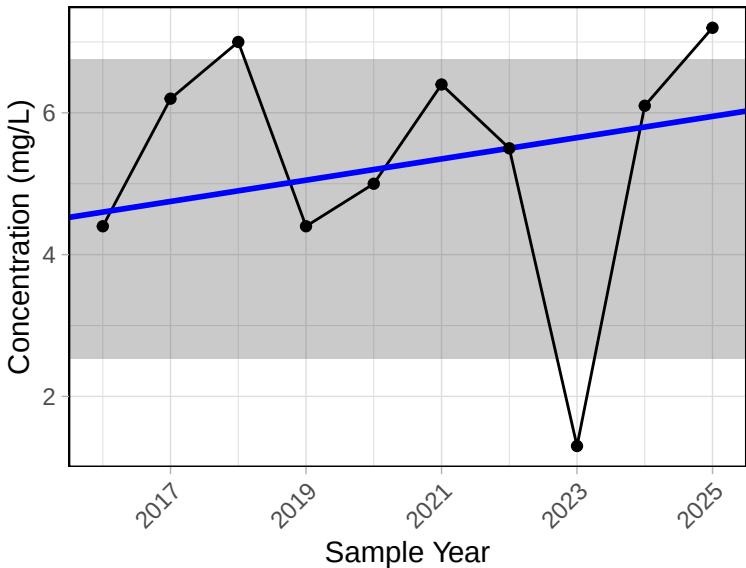
Potassium (dissolved)

S5A Water



Sodium (dissolved)

S5A Water



Trend significance p-value = 0.53



Appendix B: Certificates of Analysis

Attention: Théo Charette

CPP ENVIRONMENTAL
154-150 CHIPPEWA ROAD
SHERWOOD PARK, AB
CANADA T8A 6A2

Report Date: 2025/10/28

Report #: R3726433

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C585696

Received: 2025/10/11, 16:10

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO ₃ ,HCO ₃ ,OH (1)	2	N/A	2025/10/18	AB SOP-00005	SM 24 2320 B m
Alkalinity @25C (pp, total), CO ₃ ,HCO ₃ ,OH (1)	4	N/A	2025/10/19	AB SOP-00005	SM 24 2320 B m
Cadmium - low level CCME (Total) (1)	5	N/A	2025/10/17		Auto Calc
Cadmium - low level CCME (Total) (1)	1	N/A	2025/10/20		Auto Calc
Chlorophyll and Pheophytin in Water (1)	3	2025/10/21	2025/10/22	CAL SOP-00273	SM 24 10150 A, B m
Chloride/Sulphate by Auto Colourimetry (1)	6	N/A	2025/10/17	AB SOP-00020	SM24-4500-Cl/SO ₄ -E m
Conductivity @25C (1)	2	N/A	2025/10/18	AB SOP-00005	SM 24 2510 B m
Conductivity @25C (1)	4	N/A	2025/10/19	AB SOP-00005	SM 24 2510 B m
Hardness (1)	1	N/A	2025/10/15		Auto Calc
Hardness (1)	5	N/A	2025/10/16		Auto Calc
Mercury (Total) by CV (1)	3	2025/10/16	2025/10/17	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP-Dissolved-Lab Filtered (1, 2)	6	N/A	2025/10/15	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	2025/10/16	2025/10/16	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	2025/10/16	2025/10/17	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	1	2025/10/17	2025/10/19	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Total (1)	5	2025/10/16	2025/10/16	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	1	2025/10/17	2025/10/19	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	1	N/A	2025/10/18		Auto Calc
Ion Balance (1)	5	N/A	2025/10/19		Auto Calc
Sum of cations, anions (1)	1	N/A	2025/10/15		Auto Calc
Sum of cations, anions (1)	5	N/A	2025/10/16		Auto Calc
Ammonia-N (Total) (1)	1	N/A	2025/10/17	AB SOP-00007	SM 24 4500 NH ₃ A G m
Ammonia-N (Total) (1)	2	N/A	2025/10/19	AB SOP-00007	SM 24 4500 NH ₃ A G m
Nitrate and Nitrite (1)	2	N/A	2025/10/14		Auto Calc
Nitrate and Nitrite (1)	4	N/A	2025/10/15		Auto Calc
NO ₂ (N); NO ₂ (N) + NO ₃ (N) in Water (1)	6	N/A	2025/10/14	AB SOP-00091	SM 24 4500 NO ₃ m
Nitrate (as N) (1)	2	2025/10/12	2025/10/14		Auto Calc

Attention: Théo Charette

CPP ENVIRONMENTAL
154-150 CHIPPEWA ROAD
SHERWOOD PARK, AB
CANADA T8A 6A2

Report Date: 2025/10/28

Report #: R3726433

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C585696
Received: 2025/10/11, 16:10

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Nitrate (as N) (1)	4	2025/10/12	2025/10/15		Auto Calc
pH @25°C (1, 3)	2	N/A	2025/10/18	AB SOP-00005	SM 24 4500-H+B m
pH @25°C (1, 3)	4	N/A	2025/10/19	AB SOP-00005	SM 24 4500-H+B m
Total Dissolved Solids (Filt. Residue) (1)	3	2025/10/16	2025/10/17	AB SOP-00065	SM 24 2540 C m
Total Dissolved Solids (Calculated) (1)	1	N/A	2025/10/18		Auto Calc
Total Dissolved Solids (Calculated) (1)	5	N/A	2025/10/19		Auto Calc
Total Kjeldahl Nitrogen (Total) (1)	6	N/A	2025/10/16		Auto Calc
Nitrogen (Total) (1)	6	2025/10/16	2025/10/16	AB SOP-00093	SM 24 4500-N C m
Carbon (Total Organic) (1, 4)	6	N/A	2025/10/15	AB SOP-00087	MMCW 119 1996 m
Total Phosphorus-Dissolved-Lab Filtered (1, 5)	6	2025/10/14	2025/10/14	AB SOP-00024	SM 24 4500-P A,B,F m
Total Phosphorus (1)	6	2025/10/15	2025/10/16	AB SOP-00024	SM 24 4500-P A,B,F m
Total Suspended Solids (NFR) (1)	3	2025/10/15	2025/10/16	AB SOP-00061	SM 24 2540 D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.



Your C.O.C. #: 769344-01-02

Attention: Théo Charette

CPP ENVIRONMENTAL
154-150 CHIPPEWA ROAD
SHERWOOD PARK, AB
CANADA T8A 6A2

Report Date: 2025/10/28

Report #: R3726433

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C585696

Received: 2025/10/11, 16:10

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

(4) TOC present in the sample should be considered as non-purgeable TOC.

(5) Dissolved Phosphorus > Total Phosphorus Imbalance: When applicable, Dissolved Phosphorus and Total Phosphorus results were reviewed and data quality meets acceptable levels unless otherwise noted.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Augustina Isesele, Customer Solutions Representative

Email: Augustina.isesele@bureauveritas.com

Phone# (780) 577-7100

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This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.

For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.



ROUTINE WATER -LAB FILTERED (WATER)

Bureau Veritas ID		DUU977	DUU977		DUU978	DUU979		
Sampling Date		2025/10/10 15:30	2025/10/10 15:30		2025/10/10 15:30	2025/10/10 14:30		
COC Number		769344-01-02	769344-01-02		769344-01-02	769344-01-02		
	UNITS	BEAR L	BEAR L Lab-Dup	QC Batch	EDITH L	CHRYSTINA L	RDL	QC Batch
Calculated Parameters								
Anion Sum	meq/L	0.22	N/A	C121774	0.18	0.46	N/A	C121774
Cation Sum	meq/L	0.29	N/A	C121774	0.30	0.53	N/A	C121774
Hardness (CaCO ₃)	mg/L	9.2	N/A	C121761	9.4	22	0.50	C121761
Ion Balance (% Difference)	%	NC	N/A	C121773	NC	NC	N/A	C121773
Nitrate (N)	mg/L	<0.040	N/A	C121786	<0.040	<0.040	0.040	C121786
Nitrate (NO ₃)	mg/L	<0.18	N/A	C121782	<0.18	<0.18	0.18	C121782
Nitrite (NO ₂)	mg/L	<0.13	N/A	C121782	<0.13	<0.13	0.13	C121782
Calculated Total Dissolved Solids	mg/L	13	N/A	C121835	12	24	10	C121835
Misc. Inorganics								
Conductivity	uS/cm	25	25	C127010	25	48	2.0	C128042
pH	pH	6.22	6.17	C127009	6.37	6.98	N/A	C128041
Anions								
Alkalinity (PP as CaCO ₃)	mg/L	<1.0	<1.0	C127003	<1.0	<1.0	1.0	C128037
Alkalinity (Total as CaCO ₃)	mg/L	11	11	C127003	9.2	23	1.0	C128037
Bicarbonate (HCO ₃)	mg/L	13	13	C127003	11	28	1.0	C128037
Carbonate (CO ₃)	mg/L	<1.0	<1.0	C127003	<1.0	<1.0	1.0	C128037
Hydroxide (OH)	mg/L	<1.0	<1.0	C127003	<1.0	<1.0	1.0	C128037
Chloride (Cl)	mg/L	<1.0	N/A	C126921	<1.0	<1.0	1.0	C126921
Sulphate (SO ₄)	mg/L	<1.0	N/A	C126921	<1.0	<1.0	1.0	C126921
Nutrients								
Nitrite (N)	mg/L	<0.040	N/A	C122272	<0.040	<0.040	0.040	C122272
Nitrate plus Nitrite (N)	mg/L	<0.040	N/A	C122272	<0.040	<0.040	0.040	C122272
Lab Filtered Elements								
Dissolved Calcium (Ca)	mg/L	2.8	N/A	C124224	2.8	6.4	0.30	C124224
Dissolved Iron (Fe)	mg/L	0.097	N/A	C124224	0.11	<0.060	0.060	C124224
Dissolved Magnesium (Mg)	mg/L	0.52	N/A	C124224	0.56	1.4	0.20	C124224
Dissolved Manganese (Mn)	mg/L	<0.0040	N/A	C124224	<0.0040	<0.0040	0.0040	C124224
Dissolved Potassium (K)	mg/L	0.73	N/A	C124224	0.76	1.2	0.30	C124224
Dissolved Sodium (Na)	mg/L	1.9	N/A	C124224	2.0	1.3	0.50	C124224
RDL = Reportable Detection Limit								
Lab-Dup = Laboratory Initiated Duplicate								
N/A = Not Applicable								



ROUTINE WATER -LAB FILTERED (WATER)

Bureau Veritas ID		DUU980		DUU981	DUU981		DUU982		
Sampling Date		2025/10/10 13:30		2025/10/10	2025/10/10		2025/10/10		
COC Number		769344-01-02		769344-01-02	769344-01-02		769344-01-02		
	UNITS	SSA	QC Batch	FIELD BLANK	FIELD BLANK Lab-Dup	QC Batch	TRIP BLANK	RDL	QC Batch

Calculated Parameters									
Anion Sum	meq/L	1.7	C121774	0.0000	N/A	C121774	0.0000	N/A	C121774
Cation Sum	meq/L	1.7	C121774	0.0050	N/A	C121774	0.0030	N/A	C121774
Hardness (CaCO ₃)	mg/L	66	C121761	<0.50	N/A	C121761	<0.50	0.50	C121761
Ion Balance (% Difference)	%	NC	C121773	NC	N/A	C121773	NC	N/A	C121773
Nitrate (N)	mg/L	<0.040	C121786	<0.040	N/A	C121786	<0.040	0.040	C121786
Nitrate (NO ₃)	mg/L	<0.18	C121782	<0.18	N/A	C121782	<0.18	0.18	C121782
Nitrite (NO ₂)	mg/L	<0.13	C121782	<0.13	N/A	C121782	<0.13	0.13	C121782
Calculated Total Dissolved Solids	mg/L	85	C121835	<10	N/A	C121835	<10	10	C121835

Misc. Inorganics									
Conductivity	uS/cm	140	C128042	<2.0	<2.0	C127955	<2.0	2.0	C128042
pH	pH	7.14	C128041	5.32	5.32	C127954	5.58	N/A	C128041

Anions									
Alkalinity (PP as CaCO ₃)	mg/L	<1.0	C128037	<1.0	<1.0	C127950	<1.0	1.0	C128037
Alkalinity (Total as CaCO ₃)	mg/L	75	C128037	<1.0	<1.0	C127950	<1.0	1.0	C128037
Bicarbonate (HCO ₃)	mg/L	91	C128037	<1.0	<1.0	C127950	<1.0	1.0	C128037
Carbonate (CO ₃)	mg/L	<1.0	C128037	<1.0	<1.0	C127950	<1.0	1.0	C128037
Hydroxide (OH)	mg/L	<1.0	C128037	<1.0	<1.0	C127950	<1.0	1.0	C128037
Chloride (Cl)	mg/L	6.5	C126921	<1.0	N/A	C126921	<1.0	1.0	C126921
Sulphate (SO ₄)	mg/L	<1.0	C126921	<1.0	N/A	C126921	<1.0	1.0	C126921

Nutrients									
Nitrite (N)	mg/L	<0.040	C122278	<0.040	N/A	C122272	<0.040	0.040	C122278
Nitrate plus Nitrite (N)	mg/L	<0.040	C122278	<0.040	N/A	C122272	<0.040	0.040	C122278

Lab Filtered Elements									
Dissolved Calcium (Ca)	mg/L	18	C124224	<0.30	N/A	C123217	<0.30	0.30	C124224
Dissolved Iron (Fe)	mg/L	1.8	C124224	<0.060	N/A	C123217	<0.060	0.060	C124224
Dissolved Magnesium (Mg)	mg/L	4.9	C124224	<0.20	N/A	C123217	<0.20	0.20	C124224
Dissolved Manganese (Mn)	mg/L	0.59	C124224	<0.0040	N/A	C123217	<0.0040	0.0040	C124224
Dissolved Potassium (K)	mg/L	0.97	C124224	<0.30	N/A	C123217	<0.30	0.30	C124224
Dissolved Sodium (Na)	mg/L	7.2	C124224	<0.50	N/A	C123217	<0.50	0.50	C124224

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



ROUTINE WATER -LAB FILTERED (WATER)

Bureau Veritas ID		DUU982		
Sampling Date		2025/10/10		
COC Number		769344-01-02		
	UNITS	TRIP BLANK Lab-Dup	RDL	QC Batch
Anions				
Chloride (Cl)	mg/L	<1.0	1.0	C126921
Sulphate (SO4)	mg/L	<1.0	1.0	C126921
RDL = Reportable Detection Limit				
Lab-Dup = Laboratory Initiated Duplicate				



TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		DUU977	DUU978	DUU979	DUU980	DUU981		
Sampling Date		2025/10/10 15:30	2025/10/10 15:30	2025/10/10 14:30	2025/10/10 13:30	2025/10/10		
COC Number		769344-01-02	769344-01-02	769344-01-02	769344-01-02	769344-01-02		
	UNITS	BEAR L	EDITH L	CHRYSTINA L	SSA	FIELD BLANK	RDL	QC Batch

Calculated Parameters								
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.67	0.67	0.88	0.49	<0.040	0.040	C121840
Nutrients								
Total Nitrogen (N)	mg/L	0.67	0.67	0.88	0.49	<0.020	0.020	C125257
RDL = Reportable Detection Limit								

Bureau Veritas ID		DUU982		
Sampling Date		2025/10/10		
COC Number		769344-01-02		
	UNITS	TRIP BLANK	RDL	QC Batch
Calculated Parameters				
Total Total Kjeldahl Nitrogen (Calc)	mg/L	<0.040	0.040	C121840
Nutrients				
Total Nitrogen (N)	mg/L	<0.020	0.020	C125257
RDL = Reportable Detection Limit				

**REGULATED METALS (CCME/AT1) - TOTAL**

Bureau Veritas ID		DUU977	DUU978		DUU979		DUU980		
Sampling Date		2025/10/10 15:30	2025/10/10 15:30		2025/10/10 14:30		2025/10/10 13:30		
COC Number		769344-01-02	769344-01-02		769344-01-02		769344-01-02		
	UNITS	BEAR L	EDITH L	QC Batch	CHRYSTINA L	QC Batch	S5A	RDL	QC Batch
Elements									
Total Cadmium (Cd)	ug/L	<0.020	<0.020	C121684	0.021	C121684	0.022	0.020	C121684
Total Aluminum (Al)	mg/L	0.027	0.031	C125593	0.0082	C127644	0.052	0.0030	C125593
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	C125593	<0.00060	C127644	<0.00060	0.00060	C125593
Total Arsenic (As)	mg/L	0.00051	0.00053	C125593	0.00060	C127644	0.0015	0.00020	C125593
Total Barium (Ba)	mg/L	0.019	0.020	C125597	0.042	C127651	0.051	0.010	C125597
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	C125593	<0.0010	C127644	<0.0010	0.0010	C125593
Total Boron (B)	mg/L	0.026	<0.020	C125597	<0.020	C127651	0.032	0.020	C125597
Total Calcium (Ca)	mg/L	2.4	2.5	C125597	5.8	C127651	16	0.30	C125597
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	C125593	<0.0010	C127644	<0.0010	0.0010	C125593
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	C125593	<0.00030	C127644	0.0019	0.00030	C125593
Total Copper (Cu)	mg/L	<0.0010	<0.0010	C125593	<0.0010	C127644	<0.0010	0.0010	C125593
Total Iron (Fe)	mg/L	0.20	0.21	C125597	0.16	C127651	2.6	0.060	C125597
Total Lead (Pb)	mg/L	<0.00020	<0.00020	C125593	<0.00020	C127644	<0.00020	0.00020	C125593
Total Lithium (Li)	mg/L	<0.020	<0.020	C125597	<0.020	C127651	<0.020	0.020	C125597
Total Magnesium (Mg)	mg/L	0.48	0.49	C125597	1.3	C127651	4.6	0.20	C125597
Total Manganese (Mn)	mg/L	0.017	0.018	C125597	0.036	C127651	0.55	0.0040	C125597
Total Molybdenum (Mo)	mg/L	<0.00020	<0.00020	C125593	<0.00020	C127644	0.00022	0.00020	C125593
Total Nickel (Ni)	mg/L	<0.00050	<0.00050	C125593	<0.00050	C127644	0.0021	0.00050	C125593
Total Phosphorus (P)	mg/L	<0.10	<0.10	C125597	<0.10	C127651	<0.10	0.10	C125597
Total Potassium (K)	mg/L	0.56	0.55	C125597	1.1	C127651	0.74	0.30	C125597
Total Selenium (Se)	mg/L	<0.00020	<0.00020	C125593	<0.00020	C127644	<0.00020	0.00020	C125593
Total Silicon (Si)	mg/L	<0.50	<0.50	C125597	0.70	C127651	7.2	0.50	C125597
Total Silver (Ag)	mg/L	<0.00010	<0.00010	C125593	<0.00010	C127644	<0.00010	0.00010	C125593
Total Sodium (Na)	mg/L	1.7	1.7	C125597	1.1	C127651	6.0	0.50	C125597
Total Strontium (Sr)	mg/L	<0.020	<0.020	C125597	0.028	C127651	0.087	0.020	C125597
Total Sulphur (S)	mg/L	0.33	0.31	C125597	<0.20	C127651	0.38	0.20	C125597
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	C125593	<0.00020	C127644	<0.00020	0.00020	C125593
Total Tin (Sn)	mg/L	<0.0010	<0.0010	C125593	<0.0010	C127644	<0.0010	0.0010	C125593
Total Titanium (Ti)	mg/L	<0.0010	<0.0010	C125593	<0.0010	C127644	<0.0010	0.0010	C125593
Total Uranium (U)	mg/L	<0.00010	<0.00010	C125593	<0.00010	C127644	<0.00010	0.00010	C125593
Total Vanadium (V)	mg/L	<0.0010	<0.0010	C125593	<0.0010	C127644	<0.0010	0.0010	C125593
Total Zinc (Zn)	mg/L	<0.0030	<0.0030	C125593	<0.0030	C127644	<0.0030	0.0030	C125593
RDL = Reportable Detection Limit									

**REGULATED METALS (CCME/AT1) - TOTAL**

Bureau Veritas ID		DUU981		DUU982		
Sampling Date		2025/10/10		2025/10/10		
COC Number		769344-01-02		769344-01-02		
	UNITS	FIELD BLANK	QC Batch	TRIP BLANK	RDL	QC Batch
Elements						
Total Cadmium (Cd)	ug/L	<0.020	C121684	<0.020	0.020	C121684
Total Aluminum (Al)	mg/L	<0.0030	C125593	0.0037	0.0030	C125593
Total Antimony (Sb)	mg/L	<0.00060	C125593	<0.00060	0.00060	C125593
Total Arsenic (As)	mg/L	<0.00020	C125593	<0.00020	0.00020	C125593
Total Barium (Ba)	mg/L	<0.010	C125597	<0.010	0.010	C125597
Total Beryllium (Be)	mg/L	<0.0010	C125593	<0.0010	0.0010	C125593
Total Boron (B)	mg/L	<0.020	C125597	<0.020	0.020	C139823
Total Calcium (Ca)	mg/L	<0.30	C125597	<0.30	0.30	C125597
Total Chromium (Cr)	mg/L	<0.0010	C125593	<0.0010	0.0010	C125593
Total Cobalt (Co)	mg/L	<0.00030	C125593	<0.00030	0.00030	C125593
Total Copper (Cu)	mg/L	<0.0010	C125593	<0.0010	0.0010	C125593
Total Iron (Fe)	mg/L	<0.060	C125597	<0.060	0.060	C125597
Total Lead (Pb)	mg/L	<0.00020	C125593	<0.00020	0.00020	C125593
Total Lithium (Li)	mg/L	<0.020	C125597	<0.020	0.020	C125597
Total Magnesium (Mg)	mg/L	<0.20	C125597	<0.20	0.20	C125597
Total Manganese (Mn)	mg/L	<0.0040	C125597	<0.0040	0.0040	C125597
Total Molybdenum (Mo)	mg/L	<0.00020	C125593	<0.00020	0.00020	C125593
Total Nickel (Ni)	mg/L	<0.00050	C125593	<0.00050	0.00050	C125593
Total Phosphorus (P)	mg/L	<0.10	C125597	<0.10	0.10	C125597
Total Potassium (K)	mg/L	<0.30	C125597	<0.30	0.30	C125597
Total Selenium (Se)	mg/L	<0.00020	C125593	<0.00020	0.00020	C125593
Total Silicon (Si)	mg/L	<0.50	C125597	<0.50	0.50	C125597
Total Silver (Ag)	mg/L	<0.00010	C125593	<0.00010	0.00010	C125593
Total Sodium (Na)	mg/L	<0.50	C125597	<0.50	0.50	C125597
Total Strontium (Sr)	mg/L	<0.020	C125597	<0.020	0.020	C125597
Total Sulphur (S)	mg/L	<0.20	C125597	<0.20	0.20	C125597
Total Thallium (Tl)	mg/L	<0.00020	C125593	<0.00020	0.00020	C125593
Total Tin (Sn)	mg/L	<0.0010	C125593	<0.0010	0.0010	C125593
Total Titanium (Ti)	mg/L	<0.0010	C125593	<0.0010	0.0010	C125593
Total Uranium (U)	mg/L	<0.00010	C125593	<0.00010	0.00010	C125593
Total Vanadium (V)	mg/L	<0.0010	C125593	<0.0010	0.0010	C125593
Total Zinc (Zn)	mg/L	<0.0030	C125593	<0.0030	0.0030	C125593
RDL = Reportable Detection Limit						



RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		DUU977	DUU977		DUU978			DUU979		
Sampling Date		2025/10/10 15:30	2025/10/10 15:30		2025/10/10 15:30			2025/10/10 14:30		
COC Number		769344-01-02	769344-01-02		769344-01-02			769344-01-02		
	UNITS	BEAR L	BEAR L Lab-Dup	QC Batch	EDITH L	RDL	QC Batch	CHRYSTINA L	RDL	QC Batch

Misc. Inorganics

Total Organic Carbon (C)	mg/L	12	12	C124377	12	0.50	C124377	8.2	0.50	C124377
Total Dissolved Solids	mg/L	N/A	N/A	C125211	60	10	C125211	60	10	C125211
Total Suspended Solids	mg/L	N/A	N/A	C123610	1.1	1.0	C123610	4.7	1.0	C123610

MISCELLANEOUS

Chlorophyll a	ug/L	N/A	N/A	C131617	7.9 (1)	0.64	C131617	5.6 (1)	0.70	C131617
Chlorophyll c	ug/L	N/A	N/A	C131617	<0.64 (1)	0.64	C131617	0.71 (1)	0.70	C131617
Pheophytin A	ug/L	N/A	N/A	C131617	4.8 (1)	0.64	C131617	<0.70 (1)	0.70	C131617

Nutrients

Total Ammonia (N)	mg/L	N/A	N/A	C127354	0.015	0.015	C127354	0.15	0.015	C129438
Total Phosphorus (P)	mg/L	0.017	N/A	C124267	0.018	0.0030	C124244	0.012	0.0030	C124244

Lab Filtered Nutrients

Dissolved Phosphorus (P)	mg/L	0.0058	N/A	C122299	0.0056	0.0030	C122299	0.0049	0.0030	C122299
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RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Detection limit raised due to sample volume used for analysis.

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Bureau Veritas ID		DUU980		DUU981	DUU981		DUU982		
Sampling Date		2025/10/10 13:30		2025/10/10	2025/10/10		2025/10/10		
COC Number		769344-01-02		769344-01-02	769344-01-02		769344-01-02		
	UNITS	S5A	QC Batch	FIELD BLANK	FIELD BLANK Lab-Dup	QC Batch	TRIP BLANK	RDL	QC Batch

Misc. Inorganics

Total Organic Carbon (C)	mg/L	17	C124377	<0.50	N/A	C124377	<0.50	0.50	C124377
Total Dissolved Solids	mg/L	96	C125211	N/A	N/A	C125211	N/A	10	C125211
Total Suspended Solids	mg/L	<1.0	C123610	N/A	N/A	C123610	N/A	1.0	C123610

MISCELLANEOUS

Chlorophyll a	ug/L	1.9	C131617	N/A	N/A	C131617	N/A	0.53	C131617
Chlorophyll c	ug/L	2.4	C131617	N/A	N/A	C131617	N/A	0.53	C131617
Pheophytin A	ug/L	>8.6 (1)	C131617	N/A	N/A	C131617	N/A	0.53	C131617

Nutrients

Total Ammonia (N)	mg/L	0.015	C129438	N/A	N/A	C129438	N/A	0.015	C129438
Total Phosphorus (P)	mg/L	0.050	C124267	<0.0030	N/A	C124244	<0.0030	0.0030	C124267

Lab Filtered Nutrients

Dissolved Phosphorus (P)	mg/L	0.032	C122299	<0.0030	<0.0030	C122299	<0.0030	0.0030	C122299
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RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Sample turbidity exceeds operating range of this method. Low bias is likely.



MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		DUU978	DUU979	DUU980		
Sampling Date		2025/10/10 15:30	2025/10/10 14:30	2025/10/10 13:30		
COC Number		769344-01-02	769344-01-02	769344-01-02		
	UNITS	EDITH L	CHRYSTINA L	S5A	RDL	QC Batch
Elements						
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	0.0019	C126040
RDL = Reportable Detection Limit						



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.0°C
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Sample DUU977 [BEAR L] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample DUU978 [EDITH L] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample DUU979 [CHRYSTINA L] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample DUU980 [S5A] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample DUU981 [FIELD BLANK] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample DUU982 [TRIP BLANK] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample DUU982, Elements by ICP - Total: Test repeated.

Results relate only to the items tested.



**BUREAU
VERITAS**

Bureau Veritas Job #: C585696
Report Date: 2025/10/28

CPP ENVIRONMENTAL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C122272	AFI	Matrix Spike	Nitrite (N)	2025/10/14		102	%	80 - 120
			Nitrate plus Nitrite (N)	2025/10/14		100	%	80 - 120
C122272	AFI	Spiked Blank	Nitrite (N)	2025/10/14		106	%	80 - 120
			Nitrate plus Nitrite (N)	2025/10/14		108	%	80 - 120
C122272	AFI	Method Blank	Nitrite (N)	2025/10/14	<0.040		mg/L	
			Nitrate plus Nitrite (N)	2025/10/14	<0.040		mg/L	
C122272	AFI	RPD	Nitrite (N)	2025/10/14	NC		%	20
			Nitrate plus Nitrite (N)	2025/10/14	19		%	20
C122278	AFI	Matrix Spike	Nitrite (N)	2025/10/14		100	%	80 - 120
			Nitrate plus Nitrite (N)	2025/10/14		119	%	80 - 120
C122278	AFI	Spiked Blank	Nitrite (N)	2025/10/14		106	%	80 - 120
			Nitrate plus Nitrite (N)	2025/10/14		111	%	80 - 120
C122278	AFI	Method Blank	Nitrite (N)	2025/10/14	<0.040		mg/L	
			Nitrate plus Nitrite (N)	2025/10/14	<0.040		mg/L	
C122278	AFI	RPD	Nitrite (N)	2025/10/14	NC		%	20
			Nitrate plus Nitrite (N)	2025/10/14	NC		%	20
C122299	MAP	Matrix Spike [DUU981-03]	Dissolved Phosphorus (P)	2025/10/14		96	%	80 - 120
C122299	MAP	QC Standard	Dissolved Phosphorus (P)	2025/10/14		89	%	80 - 120
C122299	MAP	Spiked Blank	Dissolved Phosphorus (P)	2025/10/14		98	%	80 - 120
C122299	MAP	Method Blank	Dissolved Phosphorus (P)	2025/10/14	<0.0030		mg/L	
C122299	MAP	RPD [DUU981-03]	Dissolved Phosphorus (P)	2025/10/14	NC		%	20
C123217	KHU	Matrix Spike	Dissolved Calcium (Ca)	2025/10/15		NC	%	80 - 120
			Dissolved Iron (Fe)	2025/10/15		102	%	80 - 120
			Dissolved Magnesium (Mg)	2025/10/15		84	%	80 - 120
			Dissolved Manganese (Mn)	2025/10/15		100	%	80 - 120
			Dissolved Potassium (K)	2025/10/15		96	%	80 - 120
			Dissolved Sodium (Na)	2025/10/15		85	%	80 - 120
C123217	KHU	Spiked Blank	Dissolved Calcium (Ca)	2025/10/15		99	%	80 - 120
			Dissolved Iron (Fe)	2025/10/15		102	%	80 - 120
			Dissolved Magnesium (Mg)	2025/10/15		98	%	80 - 120
			Dissolved Manganese (Mn)	2025/10/15		101	%	80 - 120
			Dissolved Potassium (K)	2025/10/15		101	%	80 - 120
			Dissolved Sodium (Na)	2025/10/15		99	%	80 - 120
C123217	KHU	Method Blank	Dissolved Calcium (Ca)	2025/10/15	<0.30		mg/L	
			Dissolved Iron (Fe)	2025/10/15	<0.060		mg/L	
			Dissolved Magnesium (Mg)	2025/10/15	<0.20		mg/L	
			Dissolved Manganese (Mn)	2025/10/15	<0.0040		mg/L	
			Dissolved Potassium (K)	2025/10/15	<0.30		mg/L	
			Dissolved Sodium (Na)	2025/10/15	<0.50		mg/L	
C123217	KHU	RPD	Dissolved Calcium (Ca)	2025/10/15	0.70		%	20
			Dissolved Iron (Fe)	2025/10/15	NC		%	20
			Dissolved Magnesium (Mg)	2025/10/15	1.0		%	20
			Dissolved Manganese (Mn)	2025/10/15	NC		%	20
			Dissolved Potassium (K)	2025/10/15	0.78		%	20
			Dissolved Sodium (Na)	2025/10/15	0.77		%	20
C123610	DVN	Matrix Spike	Total Suspended Solids	2025/10/16		97	%	80 - 120
C123610	DVN	Spiked Blank	Total Suspended Solids	2025/10/16		93	%	80 - 120
C123610	DVN	Method Blank	Total Suspended Solids	2025/10/16	<1.0		mg/L	
C123610	DVN	RPD	Total Suspended Solids	2025/10/16	10		%	20
C124224	KHU	Matrix Spike	Dissolved Calcium (Ca)	2025/10/15		NC	%	80 - 120
			Dissolved Iron (Fe)	2025/10/15		104	%	80 - 120
			Dissolved Magnesium (Mg)	2025/10/15		NC	%	80 - 120
			Dissolved Manganese (Mn)	2025/10/15		103	%	80 - 120
			Dissolved Potassium (K)	2025/10/15		97	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C124224	KHU	Spiked Blank	Dissolved Sodium (Na)	2025/10/15		NC	%	80 - 120
			Dissolved Calcium (Ca)	2025/10/15		101	%	80 - 120
			Dissolved Iron (Fe)	2025/10/15		107	%	80 - 120
			Dissolved Magnesium (Mg)	2025/10/15		101	%	80 - 120
			Dissolved Manganese (Mn)	2025/10/15		104	%	80 - 120
			Dissolved Potassium (K)	2025/10/15		102	%	80 - 120
			Dissolved Sodium (Na)	2025/10/15		101	%	80 - 120
C124224	KHU	Method Blank	Dissolved Calcium (Ca)	2025/10/15	<0.30		mg/L	
			Dissolved Iron (Fe)	2025/10/15	<0.060		mg/L	
			Dissolved Magnesium (Mg)	2025/10/15	<0.20		mg/L	
			Dissolved Manganese (Mn)	2025/10/15	<0.0040		mg/L	
			Dissolved Potassium (K)	2025/10/15	<0.30		mg/L	
			Dissolved Sodium (Na)	2025/10/15	<0.50		mg/L	
			Dissolved Calcium (Ca)	2025/10/15	0.89		%	20
C124224	KHU	RPD	Dissolved Magnesium (Mg)	2025/10/15	0.70		%	20
C124244	BCN	Matrix Spike	Total Phosphorus (P)	2025/10/16		97	%	80 - 120
C124244	BCN	QC Standard	Total Phosphorus (P)	2025/10/16		87	%	80 - 120
C124244	BCN	Spiked Blank	Total Phosphorus (P)	2025/10/16		96	%	80 - 120
C124244	BCN	Method Blank	Total Phosphorus (P)	2025/10/16	<0.0030		mg/L	
C124244	BCN	RPD	Total Phosphorus (P)	2025/10/16	NC		%	20
C124267	BCN	Matrix Spike	Total Phosphorus (P)	2025/10/16		NC	%	80 - 120
C124267	BCN	QC Standard	Total Phosphorus (P)	2025/10/16		88	%	80 - 120
C124267	BCN	Spiked Blank	Total Phosphorus (P)	2025/10/16		95	%	80 - 120
C124267	BCN	Method Blank	Total Phosphorus (P)	2025/10/16	<0.0030		mg/L	
C124267	BCN	RPD	Total Phosphorus (P)	2025/10/16	2.1		%	20
C124377	TJ4	Matrix Spike [DUU977-02]	Total Organic Carbon (C)	2025/10/15		NC	%	75 - 125
C124377	TJ4	Spiked Blank	Total Organic Carbon (C)	2025/10/15		101	%	80 - 120
C124377	TJ4	Method Blank	Total Organic Carbon (C)	2025/10/15	<0.50		mg/L	
C124377	TJ4	RPD [DUU977-02]	Total Organic Carbon (C)	2025/10/15	0.85		%	20
C125211	TNY	Matrix Spike	Total Dissolved Solids	2025/10/17		96	%	80 - 120
C125211	TNY	Spiked Blank	Total Dissolved Solids	2025/10/17		101	%	80 - 120
C125211	TNY	Method Blank	Total Dissolved Solids	2025/10/17	<10		mg/L	
C125211	TNY	RPD	Total Dissolved Solids	2025/10/17	1.9		%	20
C125257	YL7	Matrix Spike	Total Nitrogen (N)	2025/10/16		NC	%	80 - 120
C125257	YL7	QC Standard	Total Nitrogen (N)	2025/10/16		106	%	80 - 120
C125257	YL7	Spiked Blank	Total Nitrogen (N)	2025/10/16		110	%	80 - 120
C125257	YL7	Method Blank	Total Nitrogen (N)	2025/10/16	<0.020		mg/L	
C125257	YL7	RPD	Total Nitrogen (N)	2025/10/16	1.6		%	20
C125593	JAB	Matrix Spike [DUU978-02]	Total Aluminum (Al)	2025/10/16		111	%	80 - 120
			Total Antimony (Sb)	2025/10/16		103	%	80 - 120
			Total Arsenic (As)	2025/10/16		104	%	80 - 120
			Total Beryllium (Be)	2025/10/16		114	%	80 - 120
			Total Chromium (Cr)	2025/10/16		100	%	80 - 120
			Total Cobalt (Co)	2025/10/16		98	%	80 - 120
			Total Copper (Cu)	2025/10/16		96	%	80 - 120
			Total Lead (Pb)	2025/10/16		102	%	80 - 120
			Total Molybdenum (Mo)	2025/10/16		104	%	80 - 120
			Total Nickel (Ni)	2025/10/16		97	%	80 - 120
			Total Selenium (Se)	2025/10/16		101	%	80 - 120
			Total Silver (Ag)	2025/10/16		102	%	80 - 120
			Total Thallium (Tl)	2025/10/16		106	%	80 - 120
			Total Tin (Sn)	2025/10/16		104	%	80 - 120
			Total Titanium (Ti)	2025/10/16		108	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C125593	JAB	Spiked Blank	Total Uranium (U)	2025/10/16		107	%	80 - 120
			Total Vanadium (V)	2025/10/16		100	%	80 - 120
			Total Zinc (Zn)	2025/10/16		100	%	80 - 120
			Total Aluminum (Al)	2025/10/16		108	%	80 - 120
			Total Antimony (Sb)	2025/10/16		103	%	80 - 120
			Total Arsenic (As)	2025/10/16		108	%	80 - 120
			Total Beryllium (Be)	2025/10/16		111	%	80 - 120
			Total Chromium (Cr)	2025/10/16		104	%	80 - 120
			Total Cobalt (Co)	2025/10/16		102	%	80 - 120
			Total Copper (Cu)	2025/10/16		100	%	80 - 120
			Total Lead (Pb)	2025/10/16		103	%	80 - 120
			Total Molybdenum (Mo)	2025/10/16		104	%	80 - 120
			Total Nickel (Ni)	2025/10/16		101	%	80 - 120
			Total Selenium (Se)	2025/10/16		100	%	80 - 120
			Total Silver (Ag)	2025/10/16		103	%	80 - 120
			Total Thallium (Tl)	2025/10/16		108	%	80 - 120
			Total Tin (Sn)	2025/10/16		104	%	80 - 120
			Total Titanium (Ti)	2025/10/16		103	%	80 - 120
			Total Uranium (U)	2025/10/16		107	%	80 - 120
			Total Vanadium (V)	2025/10/16		103	%	80 - 120
C125593	JAB	Method Blank	Total Zinc (Zn)	2025/10/16		104	%	80 - 120
			Total Aluminum (Al)	2025/10/16	<0.0030		mg/L	
			Total Antimony (Sb)	2025/10/16	<0.00060		mg/L	
			Total Arsenic (As)	2025/10/16	<0.00020		mg/L	
			Total Beryllium (Be)	2025/10/16	<0.0010		mg/L	
			Total Chromium (Cr)	2025/10/16	<0.0010		mg/L	
			Total Cobalt (Co)	2025/10/16	<0.00030		mg/L	
			Total Copper (Cu)	2025/10/16	<0.0010		mg/L	
			Total Lead (Pb)	2025/10/16	<0.00020		mg/L	
			Total Molybdenum (Mo)	2025/10/16	<0.00020		mg/L	
			Total Nickel (Ni)	2025/10/16	<0.00050		mg/L	
			Total Selenium (Se)	2025/10/16	<0.00020		mg/L	
			Total Silver (Ag)	2025/10/16	<0.00010		mg/L	
			Total Thallium (Tl)	2025/10/16	<0.00020		mg/L	
			Total Tin (Sn)	2025/10/16	<0.0010		mg/L	
			Total Titanium (Ti)	2025/10/16	<0.0010		mg/L	
			Total Uranium (U)	2025/10/16	<0.00010		mg/L	
			Total Vanadium (V)	2025/10/16	<0.0010		mg/L	
			Total Zinc (Zn)	2025/10/16	<0.0030		mg/L	
C125593	JAB	RPD	Total Aluminum (Al)	2025/10/16	NC		%	20
			Total Antimony (Sb)	2025/10/16	NC		%	20
			Total Arsenic (As)	2025/10/16	NC		%	20
			Total Beryllium (Be)	2025/10/16	NC		%	20
			Total Chromium (Cr)	2025/10/16	NC		%	20
			Total Cobalt (Co)	2025/10/16	NC		%	20
			Total Copper (Cu)	2025/10/16	NC		%	20
			Total Lead (Pb)	2025/10/16	NC		%	20
			Total Molybdenum (Mo)	2025/10/16	NC		%	20
			Total Nickel (Ni)	2025/10/16	NC		%	20
			Total Selenium (Se)	2025/10/16	NC		%	20
			Total Silver (Ag)	2025/10/16	NC		%	20
			Total Thallium (Tl)	2025/10/16	NC		%	20
			Total Tin (Sn)	2025/10/16	NC		%	20
			Total Titanium (Ti)	2025/10/16	NC		%	20
			Total Uranium (U)	2025/10/16	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C125597	VSC	Matrix Spike [DUU981-01]	Total Vanadium (V)	2025/10/16	NC		%	20
			Total Zinc (Zn)	2025/10/16	NC		%	20
			Total Barium (Ba)	2025/10/16		101	%	80 - 120
			Total Boron (B)	2025/10/16		97	%	80 - 120
			Total Calcium (Ca)	2025/10/16		91	%	80 - 120
			Total Iron (Fe)	2025/10/16		101	%	80 - 120
			Total Lithium (Li)	2025/10/16		95	%	80 - 120
			Total Magnesium (Mg)	2025/10/16		105	%	80 - 120
			Total Manganese (Mn)	2025/10/16		96	%	80 - 120
			Total Phosphorus (P)	2025/10/16		109	%	80 - 120
			Total Potassium (K)	2025/10/16		91	%	80 - 120
			Total Silicon (Si)	2025/10/16		106	%	80 - 120
			Total Sodium (Na)	2025/10/16		94	%	80 - 120
			Total Strontium (Sr)	2025/10/16		97	%	80 - 120
C125597	VSC	Spiked Blank	Total Sulphur (S)	2025/10/16		98	%	80 - 120
			Total Barium (Ba)	2025/10/16		100	%	80 - 120
			Total Boron (B)	2025/10/16		97	%	80 - 120
			Total Calcium (Ca)	2025/10/16		91	%	80 - 120
			Total Iron (Fe)	2025/10/16		105	%	80 - 120
			Total Lithium (Li)	2025/10/16		95	%	80 - 120
			Total Magnesium (Mg)	2025/10/16		107	%	80 - 120
			Total Manganese (Mn)	2025/10/16		98	%	80 - 120
			Total Phosphorus (P)	2025/10/16		110	%	80 - 120
			Total Potassium (K)	2025/10/16		90	%	80 - 120
			Total Silicon (Si)	2025/10/16		107	%	80 - 120
			Total Sodium (Na)	2025/10/16		94	%	80 - 120
			Total Strontium (Sr)	2025/10/16		97	%	80 - 120
			Total Sulphur (S)	2025/10/16		98	%	80 - 120
C125597	VSC	Method Blank	Total Barium (Ba)	2025/10/17	<0.010		mg/L	
			Total Boron (B)	2025/10/17	<0.020		mg/L	
			Total Calcium (Ca)	2025/10/17	<0.30		mg/L	
			Total Iron (Fe)	2025/10/17	<0.060		mg/L	
			Total Lithium (Li)	2025/10/17	<0.020		mg/L	
			Total Magnesium (Mg)	2025/10/17	<0.20		mg/L	
			Total Manganese (Mn)	2025/10/17	<0.0040		mg/L	
			Total Phosphorus (P)	2025/10/17	<0.10		mg/L	
			Total Potassium (K)	2025/10/17	<0.30		mg/L	
			Total Silicon (Si)	2025/10/17	<0.50		mg/L	
			Total Sodium (Na)	2025/10/17	<0.50		mg/L	
			Total Strontium (Sr)	2025/10/17	<0.020		mg/L	
			Total Sulphur (S)	2025/10/17	<0.20		mg/L	
C125597	VSC	RPD	Total Barium (Ba)	2025/10/20	NC		%	20
			Total Boron (B)	2025/10/20	NC		%	20
			Total Calcium (Ca)	2025/10/20	NC		%	20
			Total Iron (Fe)	2025/10/20	NC		%	20
			Total Lithium (Li)	2025/10/20	NC		%	20
			Total Magnesium (Mg)	2025/10/20	NC		%	20
			Total Manganese (Mn)	2025/10/20	NC		%	20
			Total Phosphorus (P)	2025/10/20	NC		%	20
			Total Potassium (K)	2025/10/20	NC		%	20
			Total Silicon (Si)	2025/10/20	NC		%	20
			Total Sodium (Na)	2025/10/20	NC		%	20
			Total Strontium (Sr)	2025/10/20	NC		%	20
			Total Sulphur (S)	2025/10/20	NC		%	20



BUREAU
VERITAS

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CPP ENVIRONMENTAL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C126040	KKM	Matrix Spike	Total Mercury (Hg)	2025/10/17		101	%	80 - 120
C126040	KKM	Spiked Blank	Total Mercury (Hg)	2025/10/17		104	%	80 - 120
C126040	KKM	Method Blank	Total Mercury (Hg)	2025/10/17	<0.0019		ug/L	
C126040	KKM	RPD	Total Mercury (Hg)	2025/10/17	NC		%	20
C126921	YL7	Matrix Spike [DUU982-01]	Chloride (Cl)	2025/10/17		103	%	80 - 120
			Sulphate (SO4)	2025/10/17		99	%	80 - 120
C126921	YL7	Spiked Blank	Chloride (Cl)	2025/10/17		103	%	80 - 120
			Sulphate (SO4)	2025/10/17		107	%	80 - 120
C126921	YL7	Method Blank	Chloride (Cl)	2025/10/17	<1.0		mg/L	
			Sulphate (SO4)	2025/10/17	<1.0		mg/L	
C126921	YL7	RPD [DUU982-01]	Chloride (Cl)	2025/10/17	NC		%	20
			Sulphate (SO4)	2025/10/17	NC		%	20
C127003	AYE	Spiked Blank	Alkalinity (Total as CaCO3)	2025/10/17		100	%	80 - 120
C127003	AYE	Method Blank	Alkalinity (PP as CaCO3)	2025/10/17	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2025/10/17	<1.0		mg/L	
			Bicarbonate (HCO3)	2025/10/17	<1.0		mg/L	
			Carbonate (CO3)	2025/10/17	<1.0		mg/L	
			Hydroxide (OH)	2025/10/17	<1.0		mg/L	
C127003	AYE	RPD [DUU977-03]	Alkalinity (PP as CaCO3)	2025/10/18	NC		%	20
			Alkalinity (Total as CaCO3)	2025/10/18	3.4		%	20
			Bicarbonate (HCO3)	2025/10/18	3.4		%	20
			Carbonate (CO3)	2025/10/18	NC		%	20
			Hydroxide (OH)	2025/10/18	NC		%	20
C127009	AYE	Spiked Blank	pH	2025/10/17		100	%	97 - 103
C127009	AYE	RPD [DUU977-03]	pH	2025/10/18	0.74		%	N/A
C127010	AYE	Spiked Blank	Conductivity	2025/10/17		101	%	90 - 110
C127010	AYE	Method Blank	Conductivity	2025/10/17	<2.0		uS/cm	
C127010	AYE	RPD [DUU977-03]	Conductivity	2025/10/18	1.2		%	10
C127354	ISW	Matrix Spike	Total Ammonia (N)	2025/10/17		107	%	80 - 120
C127354	ISW	Spiked Blank	Total Ammonia (N)	2025/10/17		108	%	80 - 120
C127354	ISW	Method Blank	Total Ammonia (N)	2025/10/17	<0.015		mg/L	
C127354	ISW	RPD	Total Ammonia (N)	2025/10/17	NC		%	20
C127644	JAB	Matrix Spike	Total Aluminum (Al)	2025/10/19		134 (1)	%	80 - 120
			Total Antimony (Sb)	2025/10/19		103	%	80 - 120
			Total Arsenic (As)	2025/10/19		105	%	80 - 120
			Total Beryllium (Be)	2025/10/19		106	%	80 - 120
			Total Chromium (Cr)	2025/10/19		105	%	80 - 120
			Total Cobalt (Co)	2025/10/19		101	%	80 - 120
			Total Copper (Cu)	2025/10/19		100	%	80 - 120
			Total Lead (Pb)	2025/10/19		102	%	80 - 120
			Total Molybdenum (Mo)	2025/10/19		105	%	80 - 120
			Total Nickel (Ni)	2025/10/19		100	%	80 - 120
			Total Selenium (Se)	2025/10/19		100	%	80 - 120
			Total Silver (Ag)	2025/10/19		105	%	80 - 120
			Total Thallium (Tl)	2025/10/19		107	%	80 - 120
			Total Tin (Sn)	2025/10/19		104	%	80 - 120
			Total Titanium (Ti)	2025/10/19		104	%	80 - 120
			Total Uranium (U)	2025/10/19		108	%	80 - 120
			Total Vanadium (V)	2025/10/19		104	%	80 - 120
			Total Zinc (Zn)	2025/10/19		99	%	80 - 120
C127644	JAB	Spiked Blank	Total Aluminum (Al)	2025/10/19		102	%	80 - 120
			Total Antimony (Sb)	2025/10/19		103	%	80 - 120
			Total Arsenic (As)	2025/10/19		105	%	80 - 120
			Total Beryllium (Be)	2025/10/19		105	%	80 - 120



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CPP ENVIRONMENTAL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C127644	JAB	Method Blank	Total Chromium (Cr)	2025/10/19		104	%	80 - 120
			Total Cobalt (Co)	2025/10/19		103	%	80 - 120
			Total Copper (Cu)	2025/10/19		103	%	80 - 120
			Total Lead (Pb)	2025/10/19		102	%	80 - 120
			Total Molybdenum (Mo)	2025/10/19		103	%	80 - 120
			Total Nickel (Ni)	2025/10/19		103	%	80 - 120
			Total Selenium (Se)	2025/10/19		103	%	80 - 120
			Total Silver (Ag)	2025/10/19		103	%	80 - 120
			Total Thallium (Tl)	2025/10/19		104	%	80 - 120
			Total Tin (Sn)	2025/10/19		103	%	80 - 120
			Total Titanium (Ti)	2025/10/19		109	%	80 - 120
			Total Uranium (U)	2025/10/19		105	%	80 - 120
			Total Vanadium (V)	2025/10/19		104	%	80 - 120
			Total Zinc (Zn)	2025/10/19		104	%	80 - 120
			Total Aluminum (Al)	2025/10/19	<0.0030		mg/L	
			Total Antimony (Sb)	2025/10/19	<0.00060		mg/L	
			Total Arsenic (As)	2025/10/19	<0.00020		mg/L	
			Total Beryllium (Be)	2025/10/19	<0.0010		mg/L	
			Total Chromium (Cr)	2025/10/19	<0.0010		mg/L	
			Total Cobalt (Co)	2025/10/19	<0.00030		mg/L	
			Total Copper (Cu)	2025/10/19	<0.0010		mg/L	
			Total Lead (Pb)	2025/10/19	<0.00020		mg/L	
			Total Molybdenum (Mo)	2025/10/19	<0.00020		mg/L	
			Total Nickel (Ni)	2025/10/19	<0.00050		mg/L	
			Total Selenium (Se)	2025/10/19	<0.00020		mg/L	
			Total Silver (Ag)	2025/10/19	<0.00010		mg/L	
			Total Thallium (Tl)	2025/10/19	<0.00020		mg/L	
			Total Tin (Sn)	2025/10/19	<0.0010		mg/L	
			Total Titanium (Ti)	2025/10/19	<0.0010		mg/L	
			Total Uranium (U)	2025/10/19	<0.00010		mg/L	
			Total Vanadium (V)	2025/10/19	<0.0010		mg/L	
			Total Zinc (Zn)	2025/10/19	<0.0030		mg/L	
C127644	JAB	RPD	Total Aluminum (Al)	2025/10/19	NC		%	20
			Total Antimony (Sb)	2025/10/19	NC		%	20
			Total Arsenic (As)	2025/10/19	NC		%	20
			Total Beryllium (Be)	2025/10/19	NC		%	20
			Total Chromium (Cr)	2025/10/19	NC		%	20
			Total Cobalt (Co)	2025/10/19	NC		%	20
			Total Copper (Cu)	2025/10/19	NC		%	20
			Total Lead (Pb)	2025/10/19	NC		%	20
			Total Molybdenum (Mo)	2025/10/19	17		%	20
			Total Nickel (Ni)	2025/10/19	NC		%	20
			Total Selenium (Se)	2025/10/19	14		%	20
			Total Silver (Ag)	2025/10/19	NC		%	20
			Total Thallium (Tl)	2025/10/19	NC		%	20
			Total Tin (Sn)	2025/10/19	NC		%	20
			Total Titanium (Ti)	2025/10/19	NC		%	20
			Total Uranium (U)	2025/10/19	4.7		%	20
			Total Vanadium (V)	2025/10/19	NC		%	20
			Total Zinc (Zn)	2025/10/19	NC		%	20
			Total Barium (Ba)	2025/10/19		101	%	80 - 120
			Total Boron (B)	2025/10/19		100	%	80 - 120
			Total Calcium (Ca)	2025/10/19		95	%	80 - 120
			Total Iron (Fe)	2025/10/19		109	%	80 - 120
C127651	KHU	Matrix Spike [DUU979-01]						



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C127651	KHU	Spiked Blank	Total Lithium (Li)	2025/10/19		95	%	80 - 120
			Total Magnesium (Mg)	2025/10/19		105	%	80 - 120
			Total Manganese (Mn)	2025/10/19		104	%	80 - 120
			Total Phosphorus (P)	2025/10/19		98	%	80 - 120
			Total Potassium (K)	2025/10/19		97	%	80 - 120
			Total Silicon (Si)	2025/10/19		99	%	80 - 120
			Total Sodium (Na)	2025/10/19		98	%	80 - 120
			Total Strontium (Sr)	2025/10/19		99	%	80 - 120
			Total Sulphur (S)	2025/10/19		89	%	80 - 120
			Total Barium (Ba)	2025/10/19		100	%	80 - 120
			Total Boron (B)	2025/10/19		99	%	80 - 120
			Total Calcium (Ca)	2025/10/19		94	%	80 - 120
			Total Iron (Fe)	2025/10/19		109	%	80 - 120
			Total Lithium (Li)	2025/10/19		94	%	80 - 120
			Total Magnesium (Mg)	2025/10/19		104	%	80 - 120
			Total Manganese (Mn)	2025/10/19		103	%	80 - 120
			Total Phosphorus (P)	2025/10/19		97	%	80 - 120
			Total Potassium (K)	2025/10/19		97	%	80 - 120
			Total Silicon (Si)	2025/10/19		99	%	80 - 120
			Total Sodium (Na)	2025/10/19		98	%	80 - 120
C127651	KHU	Method Blank	Total Strontium (Sr)	2025/10/19		98	%	80 - 120
			Total Sulphur (S)	2025/10/19		89	%	80 - 120
			Total Barium (Ba)	2025/10/19	<0.010		mg/L	
			Total Boron (B)	2025/10/19	<0.020		mg/L	
			Total Calcium (Ca)	2025/10/19	<0.30		mg/L	
			Total Iron (Fe)	2025/10/19	<0.060		mg/L	
			Total Lithium (Li)	2025/10/19	<0.020		mg/L	
			Total Magnesium (Mg)	2025/10/19	<0.20		mg/L	
			Total Manganese (Mn)	2025/10/19	<0.0040		mg/L	
			Total Phosphorus (P)	2025/10/19	<0.10		mg/L	
			Total Potassium (K)	2025/10/19	<0.30		mg/L	
			Total Silicon (Si)	2025/10/19	<0.50		mg/L	
C127651	KHU	RPD	Total Sodium (Na)	2025/10/19	<0.50		mg/L	
			Total Strontium (Sr)	2025/10/19	<0.020		mg/L	
			Total Sulphur (S)	2025/10/19	<0.20		mg/L	
			Total Barium (Ba)	2025/10/19	2.0		%	20
			Total Boron (B)	2025/10/19	NC		%	20
			Total Calcium (Ca)	2025/10/19	2.4		%	20
			Total Iron (Fe)	2025/10/19	NC		%	20
			Total Lithium (Li)	2025/10/19	NC		%	20
			Total Magnesium (Mg)	2025/10/19	2.9		%	20
			Total Manganese (Mn)	2025/10/19	NC		%	20
			Total Phosphorus (P)	2025/10/19	NC		%	20
			Total Potassium (K)	2025/10/19	3.7		%	20
C127950	AYE	Spiked Blank	Total Silicon (Si)	2025/10/19	2.2		%	20
			Total Sodium (Na)	2025/10/19	2.4		%	20
C127950	AYE	Method Blank	Total Strontium (Sr)	2025/10/19	1.5		%	20
			Total Sulphur (S)	2025/10/19	2.0		%	20
C127950	AYE	Spiked Blank	Alkalinity (Total as CaCO3)	2025/10/18		98	%	80 - 120
C127950	AYE	Method Blank	Alkalinity (PP as CaCO3)	2025/10/18	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2025/10/18	<1.0		mg/L	
			Bicarbonate (HCO3)	2025/10/18	<1.0		mg/L	
			Carbonate (CO3)	2025/10/18	<1.0		mg/L	
			Hydroxide (OH)	2025/10/18	<1.0		mg/L	
C127950	AYE	RPD [DUU981-03]	Alkalinity (PP as CaCO3)	2025/10/18	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Alkalinity (Total as CaCO ₃)	2025/10/18	NC		%	20
			Bicarbonate (HCO ₃)	2025/10/18	NC		%	20
			Carbonate (CO ₃)	2025/10/18	NC		%	20
			Hydroxide (OH)	2025/10/18	NC		%	20
C127954	AYE	Spiked Blank	pH	2025/10/18		100	%	97 - 103
C127954	AYE	RPD [DUU981-03]	pH	2025/10/18	0.073		%	N/A
C127955	AYE	Spiked Blank	Conductivity	2025/10/18		101	%	90 - 110
C127955	AYE	Method Blank	Conductivity	2025/10/18	<2.0		uS/cm	
C127955	AYE	RPD [DUU981-03]	Conductivity	2025/10/18	NC		%	10
C128037	AYE	Spiked Blank	Alkalinity (Total as CaCO ₃)	2025/10/19		98	%	80 - 120
C128037	AYE	Method Blank	Alkalinity (PP as CaCO ₃)	2025/10/19	<1.0		mg/L	
			Alkalinity (Total as CaCO ₃)	2025/10/19	<1.0		mg/L	
			Bicarbonate (HCO ₃)	2025/10/19	<1.0		mg/L	
			Carbonate (CO ₃)	2025/10/19	<1.0		mg/L	
			Hydroxide (OH)	2025/10/19	<1.0		mg/L	
C128037	AYE	RPD	Alkalinity (PP as CaCO ₃)	2025/10/19	NC		%	20
			Alkalinity (Total as CaCO ₃)	2025/10/19	4.1		%	20
			Bicarbonate (HCO ₃)	2025/10/19	4.1		%	20
			Carbonate (CO ₃)	2025/10/19	NC		%	20
			Hydroxide (OH)	2025/10/19	NC		%	20
C128041	AYE	Spiked Blank	pH	2025/10/19		100	%	97 - 103
C128041	AYE	RPD	pH	2025/10/19	0.63		%	N/A
C128042	AYE	Spiked Blank	Conductivity	2025/10/19		101	%	90 - 110
C128042	AYE	Method Blank	Conductivity	2025/10/19	<2.0		uS/cm	
C128042	AYE	RPD	Conductivity	2025/10/19	1.3		%	10
C129438	ISW	Matrix Spike	Total Ammonia (N)	2025/10/19		NC	%	80 - 120
C129438	ISW	Spiked Blank	Total Ammonia (N)	2025/10/19		100	%	80 - 120
C129438	ISW	Method Blank	Total Ammonia (N)	2025/10/19	<0.015		mg/L	
C129438	ISW	RPD	Total Ammonia (N)	2025/10/19	0.71		%	20
C131617	AP1	Spiked Blank	Chlorophyll a	2025/10/22		107	%	80 - 120
C131617	AP1	Method Blank	Chlorophyll a	2025/10/22	<0.53		ug/L	
			Chlorophyll c	2025/10/22	<0.53		ug/L	
			Pheophytin A	2025/10/22	<0.53		ug/L	
C139823	KHU	Matrix Spike	Total Boron (B)	2025/10/28		101	%	80 - 120
C139823	KHU	Spiked Blank	Total Boron (B)	2025/10/28		99	%	80 - 120
C139823	KHU	Method Blank	Total Boron (B)	2025/10/28	<0.020		mg/L	
C139823	KHU	RPD	Total Boron (B)	2025/10/28	0.85		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Sandy Yuan, M.Sc., QP, Scientific Specialist

Bureau Veritas Certified by Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.

C585696
2025/10/11 16:10

Invoice To:		Report To:		PROJECT INFORMATION:		Laboratory Use Only:	
Company:	#12272 CPP ENVIRONMENTAL	Company:		Quotation #:	C51266	Bureau Veritas Job #:	Bottle Order #:
Attention:	Théo Charette	Attention:		P.O. #:			
Address:	154-150 CHIPPEWA ROAD SHERWOOD PARK AB T8A 6A2	Address:		Project:		COC #:	Project Manager:
Tel:	(780) 964-8436	Tel:		Project Name:			
Fax:	(780) 570-5820	Fax:		Site #:			
Email:	theo.charette@cppenv.ca	Email:		Sampled By:			

Regulatory Criteria:		Special Instructions:		ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required:	
☐ ATI														Please provide advance notice for rush projects	
☐ CCME														Regular (Standard) TAT:	
☐ Other														(will be applied if Rush TAT is not specified)	
														Standard TAT - 5-7 Working days for most tests.	
														Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details	
														Job Specific Rush TAT (if applies to entire submission)	
														Date Required:	
														Rush Confirmation Number:	

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS													
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered? (Y/N)	Chlorophyll and Pheophytin in Water	Ammonia	Routine/General	TDS/TSS	Mercury	Cadmium (Cd)	+ 10 metals	Nutrients
1	Bear L	25/10/10	1530	W				X			X	X	
2	Edith L	"	1530	"	X	X	X	X	X	X	X	X	
3	Christina L	"	1430	"	X	X	X	X	X	X	X	X	
4	SSA	"	1330	"	X	X	X	X	X	X	X	X	
5													
6													
7	FIELD BLANK	25		"			X			X	X		
8	TRIP BLANK	"		"			X	X		X	X		
9													
10													

RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)		Time		RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)		Time		# jars used and not submitted		Laboratory Use Only	
Theo Charette		25/10/10		20:00		Deji Wu		2025/10/11		10:00				Time Sensitive	
						R. Pentturi		2025/10/11		16:10				Temperature (°C) on Receipt	
														Custody Seal intact on Cooler?	
														Yes No	

White: Bureau Veritas Yellow: Client

ICE: 705
MCAL: 3, 4, 9
CS: 4
CM: 7

